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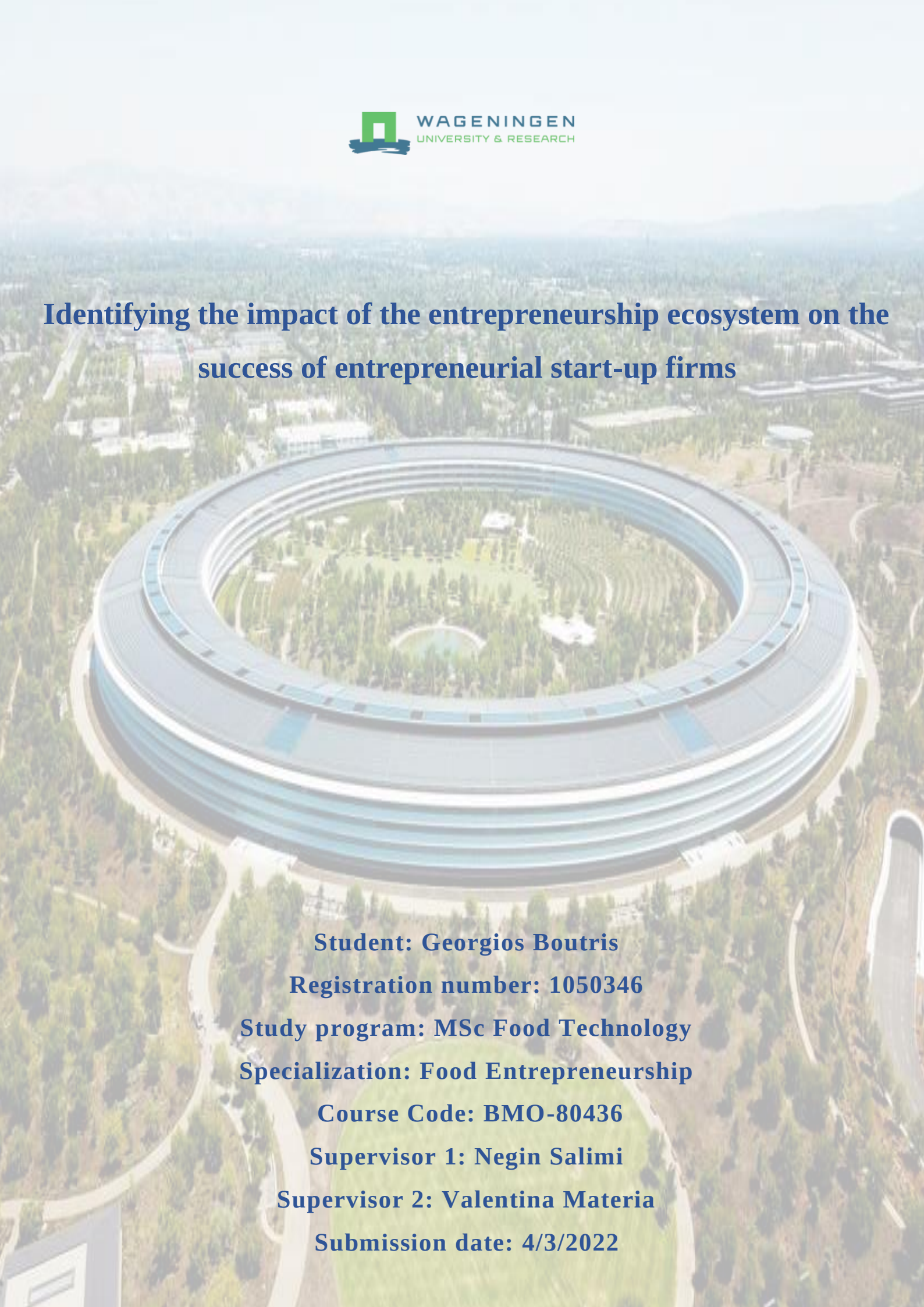
Identifying the impact of the entrepreneurship ecosystem on the success of entrepreneurial start-up firms



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Georgios Boutris

Executive Summary

The entrepreneurship ecosystem is a widely used concept that affects start-ups' performance. It is well established that various ecosystem attributes have different importance for start-ups during their lifecycle. However, a literature gap concerns the importance of these ecosystem attributes for the success of start-ups at each stage of their lifecycle separately. This study aims to investigate these ecosystem attributes, their significance, and performance for each life stage (bootstrapping, seed, and creation stage) regarding five success measures (profitability, sales growth, employment growth, market share, and return on investment). In this context, entrepreneurship ecosystem is defined as a set of interconnected entrepreneurial actors, entrepreneurial organizations, institutions, and entrepreneurial processes which formally and informally coalesce to connect, mediate, and govern the performance within the local entrepreneurial environment. Empirical data were collected from 20 Dutch agri-food industry experts through interviews using the Bayesian Best-Worst Method (BBWM) and Importance-performance analysis. The results suggest that the ecosystem attributes of Leadership, Network Density, Talent, and Capital are critical for each one of the start-ups' life stages. Furthermore, the study shows that the ecosystem attributes of Talent and Companies present differences in the creation stage compared to the previous stages. More specifically, Talent becomes even more important, while according to the experts, programs for cooperation between larger companies and start-ups require more attention. Finally, the findings indicate that the Dutch entrepreneurship ecosystem seems to be efficient and supportive for the creation and success of entrepreneurial start-up firms.

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List of Abbreviations

1. SMEs: Small and medium-sized enterprises
2. WEF: World Economic Forum
3. ROI: Return on Investment
4. BWM: Best Worst Method
5. BBWM: Bayesian Best Worst Method
6. MCDM: Multiple-Criteria-Decision-Making
7. CR: Consistency Ratio
8. MCMC: Markov-chain Monte Carlo technique
9. DM: Decision Makers

1. Introduction

An entrepreneurship ecosystem is an approach that requires extensive research, as many authors asserted that the stronger it is, the more likely a start-up is to survive and grow. So far, Salimi (2021) has investigated the main elements of success in the early stage of the start-up lifecycle and the attributes from the entrepreneurship ecosystem that are significant for start-up growth (e.g., Talent). However, this study focuses on each stage separately because there is a belief that the ecosystem attributes have different importance at each lifecycle stage. This chapter will introduce the study by presenting the general background, followed by the problem statement, the research aims, objectives, questions, significance, and the thesis structure.

1.1 General Background

In recent times, companies have been forced to adapt to more and more challenges such as market changes, sustainability, and entrepreneurship (Boutillier and Uzunidis, 2016). However, the concept of entrepreneurship alters in different economic and institutional contexts (Zoltan, 2015). The entrepreneur is responsible for identifying, acquiring, and pooling resources to maximize a firm's revenues under conditions of risk and uncertainty (Dollinger, 2008; Jones and Butler, 2016). For start-ups, companies in the initial stages of a business that an entrepreneur undertakes to create products or services, these challenges are observed differently based on the stage of their life cycle (Katila et al., 2012). To successfully address these challenges, the use of resources and capabilities is crucial and transcends business boundaries. In practice, this highlights the importance of a thriving entrepreneurship ecosystem that will help start-ups to address uncertainty and risk (Paradkar et al., 2015).

More specifically, Sternberg (2007) supported that entrepreneurship takes place in a community of interdependent actors that form an entrepreneurial ecosystem. As claimed by Mason and Brown (2014), these actors can be potential or existing entrepreneurs, organizations that support entrepreneurship, venture capitalists, business angels, and banks, along with institutions such as universities and public sector agencies. This interactive network can lead to higher productivity, employment, and innovation (Mason & Brown, 2014; Stam, 2015; World Economic Forum, 2013). In addition, the entrepreneurial ecosystem recognizes entrepreneurs' influence on the system's direction and guidance due to their role-playing

(Stam, 2015). The system is unique and consists of hundreds of elements (e.g., the entrepreneurship strategy to create wealth) that relate to each other in a complicated way. Isenberg (2011) divided the entrepreneurship ecosystem into six domains that are further analysed in Chapter 2. These domains present a diverse view of people, networks, and institutions and are critical for creating high growth potential start-ups (Stam and Spigel, 2016).

Feld (2012) introduced nine attributes of a successful start-up community. Their functionality is to underline the connection of ecosystem players (e.g., start-ups, investors, mentors, etc.) with an active role of government. As Carayannis et al. (2016) emphasized, co-operation, co-evolution and co-specialization are processes that managers and policy makers should consider for the ecosystem improvement. Furthermore, achieving a flourishing entrepreneurial ecosystem is expected to create new jobs and generate innovation. Productive entrepreneurship boosts the efficiency of the market, creates competition, and improves the quality of life (Corrente et al., 2018; Fischer and Nijkamp, 1988; Sternberg, 2012).

1.2 Problem Statement

Generally, studies have already investigated the efficiency of entrepreneurial start-ups during their life cycle (Paradkar et al., 2015), while earlier Katila et al. (2012) went through the strategies a start-up can process to achieve better performance in an industry than its competitors. Moreover, multiple researchers have examined how entrepreneurship development is affected by social and economic aspects (Bahrami and Evans, 1995; Dubini, 1989; Pennings, 1982; Van De Ven, 1993). Finally, Stam (2015) explored how public and private stakeholders perceive the entrepreneurship ecosystem. In the past, studies have analysed the influence of the entrepreneurship ecosystem on a city's economy. However, research to date has not identified the impact it may have on a country. Furthermore, although there are indications on how a start-up is affected by the entrepreneurship ecosystem in its lifecycle, there are no data for each life stage separately. There is therefore a gap in the literature on how the entrepreneurship ecosystem affects start-ups at each stage of their lifecycle across a country. In his paper, Salamzadeh (2015) identified three life stages of start-ups (bootstrapping, seed, and creation stage) which are described in detail in Section 2.7. A thriving entrepreneurship ecosystem consists of various attributes, and different models will be presented to detect the most significant ones in this research. In addition, even if institutions have created ways of measuring and comparing entrepreneurship ecosystems, a combination

of scientific and academic research is also necessary (Corrente et al., 2018). Considering the Importance-performance analysis, the nations can finally estimate which areas should be enchased (Salimi, 2021). As will be explained in the literature review, although the Netherlands is one of the most developed countries in the food sector, there is a need for improvement. For this research, start-ups from the Dutch agri-food sector will be the unit of analysis as this industry is very crucial for the Dutch economy (Long et al., 2018).

1.3 Research Aim

Given the lack of research on how the entrepreneurship ecosystem attributes contribute to the success of start-ups at each stage of their life cycle, this study aimed to analyse and evaluate these attributes by collecting empirical data from food sector experts in the Netherlands.

1.4 Research Objectives

1. To identify the attributes that contribute to the success of start-ups at every stage of their life cycle.
2. To evaluate the importance of these attributes.
3. To compare the attributes based on their importance.
4. To identify the attributes that their current performance is low but essential for start-ups' success.

1.5 Research Questions

As stated above, academic research has failed to identify the crucial attributes of the entrepreneurship ecosystem for each stage of the entrepreneurial start-ups in the Dutch agri-food sector. Therefore, the central question of this research is:

How does the entrepreneurship ecosystem contribute to the success of entrepreneurial start-up firms?

The answer to the main research question will be obtained by collecting information on five narrower sub-research questions. These are open questions that cannot be answered with yes

or no and are related to three main focal points: attributes of the entrepreneurship ecosystem, success measures, and life stages of start-ups.

1. What are the most critical attributes of the entrepreneurship ecosystem?
2. What are the measures of success in entrepreneurial start-up firms?
3. What are the stages of a start-up's life?
4. What is the importance of the ecosystem attributes contributing to start-ups' success at each stage of their lives?
5. How does the Dutch entrepreneurship ecosystem currently perform in agri-food sector?

1.6 Significance

This research will add to the body of knowledge on the success of start-ups at each stage of their lifecycle by identifying and evaluating the attributes that can improve their already performance. Furthermore, it will fill the gap that exists in the literature and provide real-world value to start-ups that want to survive and be competitive in the Dutch agri-food sector.

1.7 Structure of the report

In Chapter 2, the author looks at the already existing literature. Firstly, a literature review is conducted to introduce the concept of the entrepreneurship ecosystem. Previous authors' theories are later summarized in the theoretical framework. At the end of the chapter, the author defines the key concepts and illustrates the conceptual framework. Chapter 3 provides an overview of the methods of the research. The research design and framework present the author's process and type of research, while the operationalization table turns the concepts into measurable perceptions. The data collection clarifies the way empirical and archival data are gathered. Finally, attention is paid to interview techniques, the analysis process and the validity and reliability of the research instruments. In Chapter 4, the study's findings are presented and distinguished based on the methodology, while in Chapter 5, the author discusses the results combined with the empirical analysis. The thesis ends with the conclusions, limitations, and recommendations for future research in Chapter 6.

2. Literature Review

Many studies have analysed the concepts of the entrepreneurship ecosystem and entrepreneurial start-ups. However, the impact of the entrepreneurship ecosystem on the success of entrepreneurial start-ups at each stage of their life cycle is still unexplored. At the outset, the literature review introduces models of previous scholars on the entrepreneurship ecosystem through a theoretical framework. After selecting the most suitable model for this research, the author analyses theories related to the focal points. As mentioned in the introduction, the start-ups from the Dutch agri-food sector are the unit of analysis for this research. The definition of the key concepts combined with the conceptual framework present the logical skeleton of this study.

2.1 Entrepreneurship Ecosystem

Entrepreneurship influences every market and industry all over the world (Feld, 2012), and its improvement depends on 'entrepreneurship ecosystems', a system-based approach that policy makers have widely acknowledged (Brown and Mason, 2014; Feld, 2012; Isenberg, 2011; Malecki, 2011; Zacharakis et al., 2003). Isenberg (2011) reported that this approach is a successful technique for invigorating financial thriving while Mason and Brown (2014) claimed better openings for business development in dynamic ecosystems. A dynamic entrepreneurship ecosystem occurs when different actors interact to promote entrepreneurship. The entrepreneurship ecosystem terminology emerged in the early twenty-first century but became used more frequently after 2016 (Malecki, 2017). Due to the different concepts, the definition of the entrepreneurship ecosystem is still debatable and varies from case to case (Stam, 2015). Moreover, many authors argued that the entrepreneurial ecosystem is not unique, and many other approaches can be found in the literature (Acs et al., 2017; Gomes et al., 2018). Feldman (2014) further explored the difference between the entrepreneurship ecosystem and other approaches such as the industrial innovation system. After Feld (2012) presented his own perceptive regarding an entrepreneur's role in the ecosystem, Stam and Spigel (2016) distinguished the differences between the entrepreneurial ecosystem against the industrial district, cluster and innovation system. By creating Table 1, they illustrated the focus, the role of knowledge, and the locus of action of each approach.

Table 1. Differences and similarities between entrepreneurial ecosystems and related concepts (source: Stam and Spigel, 2016)

Approach	Industrial District, Cluster, Innovation System	Entrepreneurial Ecosystem
Main focus	Main focus is on economic and social structures of a place that influence overall innovation and firm competitiveness. In many cases, little distinction made between (fast growing) start-ups and other types of organizations.	Start-ups explicitly at centre of ecosystem. Seen as distinct from established large firms and (lower growth) SMEs in terms of conceptual development and policy formation.
Role of knowledge	Focus on knowledge as source of new technological and market insights. Knowledge from multiple sources is recombined to increase firm competitiveness. Knowledge spill overs from universities and other large research-intensive organizations are crucial.	In addition to market and technical knowledge, entrepreneurial knowledge crucial. Knowledge about the entrepreneurship process is shared between entrepreneurs and mentors through informal social networks, entrepreneurship organizations, and training courses offered.
Locus of action	Private firms and state are primary locus of action in building and maintaining industrial district/cluster/innovation system. Little room for individual agency in their creation.	Entrepreneur is the core actor in building and sustaining the ecosystem. While state and other sources might support ecosystem through public investment, entrepreneurs retain agency to develop and lead the ecosystem.

In previous studies, the approach of entrepreneurship ecosystem has been analysed based on the importance of geographical location, while some authors emphasised other factors such as the relationship between actors (Brown & Mason, 2017; Salimi, 2021). In general, many experts have tried to explain how firms benefit from creating clusters in the same geographical location (Mason and Brown, 2014). Concerning the geographical location of the ecosystem, Audretsch et al. (2015) and Backman and Lööf (2015) explained that small or medium-sized

cities seem more suitable for entrepreneurship, while in large cities, growing entrepreneurship weakens. In comparison, Fligstein (2001) reported that entrepreneurship depends partly on market opportunities. The contributions of Isenberg (2011), Mason and Brown (2014), and Stam and Spigel (2016) to these studies are also enormous (Malecki, 2017). First, Rothwell (1989) reported that the rise of entrepreneurship ecosystems is linked to market growth potential (e.g., locations with technologically advanced firms). Mason and Brown (2014) stated that economic activity differs across geographic areas following the same line of thinking.

Overall, the external business environment (e.g., economic, political, legal, technological) is the central idea of the entrepreneurship ecosystem. According to studies for which location is not the most critical factor for an entrepreneurship ecosystem, interconnections and interactions are included between different networks to find and succeed in innovation (Salimi, 2021; Zahra and Nambisan, 2011). In other words, apart from the actions that policy makers should take, networks include actors that interact and are key indicators of the efficiency of the entrepreneurship ecosystem. Finally, these actors and their inter-relationships are the main components within the entrepreneurial ecosystem (Corrente et al., 2018). The entrepreneurship ecosystem includes different attributes (e.g., culture and regulations) that make it successful. Still, there is a disagreement on which are the most important (Corrente et al., 2018). This research examines the relationship between the entrepreneurship ecosystem and the success of start-ups in the Dutch agri-food sector, including the interrelationships of various actors.

To begin with, Isenberg (2011) asserted that governmental leaders wrongly focus on addressing one or two attributes (e.g., culture and leadership) while targeting nine key principles to create an entrepreneurship ecosystem. These principles first emphasize the role of local conditions and bottom-up processes in line with the research on regional innovation and growth (Boschma and Martin, 2010; Cooke et al., 2011); (1) stop emulating Silicon Valley. Silicon Valley's ecosystem developed under special conditions even if it is the global centre of high technology and innovation; (2) shape the ecosystem around local conditions. Government leaders should recognize the conditions and formulate the ecosystem based on local entrepreneurial dimensions, climate, and style; (3) engage the private sector from the start. This principle is crucial since governments cannot create an entrepreneurship ecosystem independently, and the private sector can contribute to the ecosystem's success; (4) stress the roots of new ventures. Facing difficult conditions often leads to better ecosystems, while the financial help from programs does not eventually contribute to entrepreneurship; (5) don't over-engineer clusters;

help them grow organically. Second, they emphasize ambitious entrepreneurship; (6) favour the high potentials. The focus of programs in the entrepreneurship ecosystem should be on ambitious entrepreneurs (Ács et al., 2014; Henrekson and Johansson, 2009; Stam and Spigel, 2016); (7) get a big win on the board. Even a small success can be efficient for the entrepreneurship ecosystem. And third, focus on institutions; (8) tackle cultural change head-on. Even if the culture seems difficult to be changed, norms related to entrepreneurship can be different in less than 30 years; (9) reform legal, bureaucratic, and regulatory frameworks.

2.2 Theoretical Framework

A large and growing body of literature has investigated the attributes of the entrepreneurship ecosystem. This section briefly describes ten models illustrated in Figure 1.

Figure 1. Several models about the entrepreneurship ecosystem

2.2.1 The Entrepreneurial Personality Model (1982)

Bruno and Tyebjee (1982) were the first authors to provide their list of the most important attributes for an entrepreneurship-friendly ecosystem. In general, many countries have invested in projects considering the attributes shown in Figure 2.

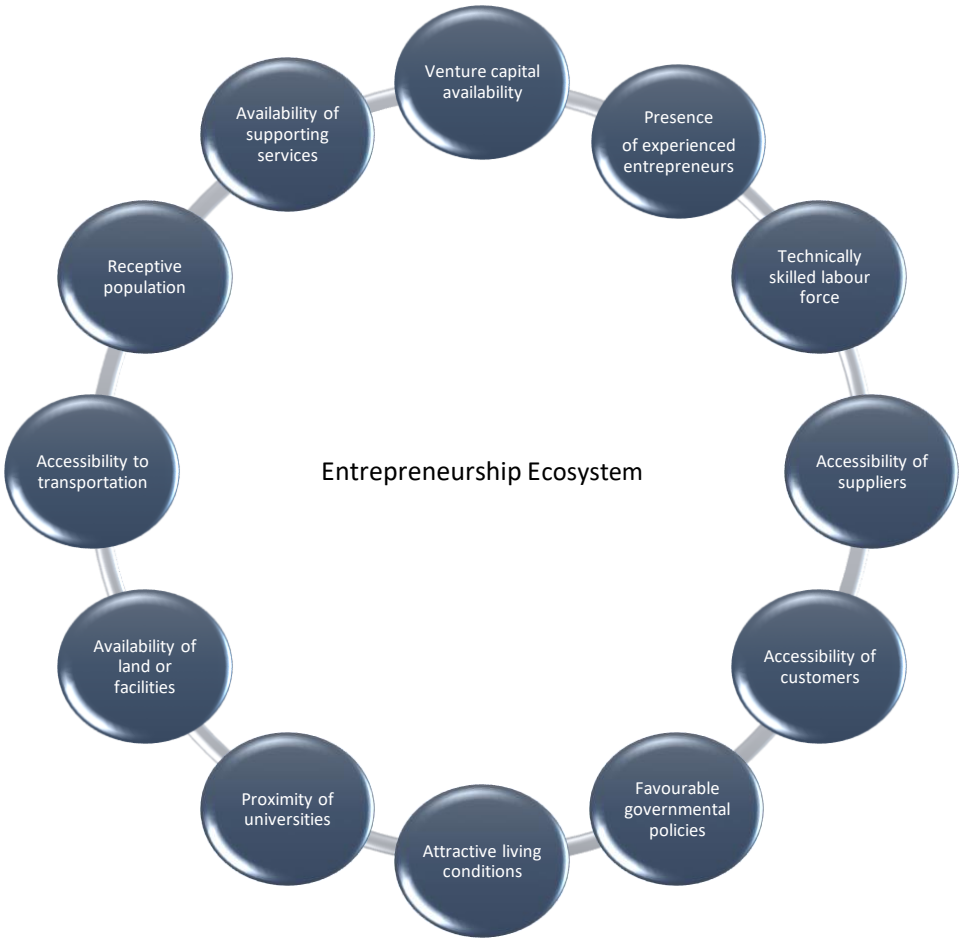

Figure 2. Attributes or key success factors for an entrepreneurship-friendly ecosystem (source: Bruno and Tyebjee, 1982)

In line with their study, capital's availability seems to be the most crucial attribute, considering the source and share aspects of interest to venture capital investors. Table 2 further breaks down each of these attributes.

Table 2. The description of the attributes or key success factors for an entrepreneurship-friendly ecosystem

Attribute	Description
Venture capital availability	The search for capital by entrepreneurs is based on the size, growth, and productivity of their start-ups.
Presence of experienced entrepreneurs	Entrepreneurs that have experience from other companies before creating their start-up.
Technically skilled labour force	Well-trained employees who are effective at work.
Accessibility of suppliers	The presence of suppliers that make their services accessible to entrepreneurs.
Accessibility of customers	The opportunity for customers to access the products of start-ups.
Favourable governmental policies	Measures that government takes to influence start-ups positively.
Attractive living conditions	Better quality of life including sustainability, higher salaries etc.
Proximity of universities	The potential in the relationship between universities and start-ups.
Availability of land or facilities	Areas that can be exploited by entrepreneurs.
Accessibility to transportation	The opportunity to access different places with relative ease.
Receptive population	People who are open to new ideas, innovations, and suggestions.
Availability of supporting services	Services that support the operation and development of start-ups.

2.2.2 The Entrepreneurial Process Model (1994)

In their view, Gnyawali and Fogel (1994) combined five attributes of the entrepreneurship ecosystem (Figure 3) with three conditions of the start-up process. For the implantation of economic activity, the conditions to be considered are: (1) the entrepreneurial opportunities,

(2) the identity of the entrepreneur seeking to create a start-up from scratch, and (3) what are the skills (technological-economic-knowledge) that will lead to a successful business. These attributes are further explained in Table 3.

Figure 3. The attributes of the entrepreneurship ecosystem that support the starting up process (source: Gnyawali and Fogel, 1994)

Table 3. The description of the attributes that support the starting up process

Attribute	Description
Socioeconomic conditions	Supporting members of society in new business activities.
Entrepreneurial and business skills	Training and education affect the effectiveness of entrepreneurs to overcome obstacles.
Non-financial assistance	Advice from business incubators on market issues.
Financial assistance	Financial support for investment companies.
Government policies and procedures	Creating the right conditions to motivate entrepreneurs.

2.2.3 The University-based Entrepreneurial Ecosystem Model (2010)

The university-based entrepreneurship ecosystem model found many supporters in 2010. The enhancement of the ecosystem through university activities such as research and teaching was introduced by (Greene et al., 2010). According to Wilson et al. (2009), these activities are not limited to the university to create a strong network, consisting of external and internal stakeholders. Finally, as indicated by the study by Greene et al. (2010), regions with this type of ecosystem are distinctive because their universities promote entrepreneurship.

2.2.4 Isenberg's Entrepreneurship Ecosystem Model (2011)

The conditions in which an ecosystem emerges are different. Based on these principles, Isenberg (2011) introduced six domains into the entrepreneurship ecosystem: policy, finance, culture, support, human capital and markets (Figure 4). In these domains, many elements are included and linked in complex ways.

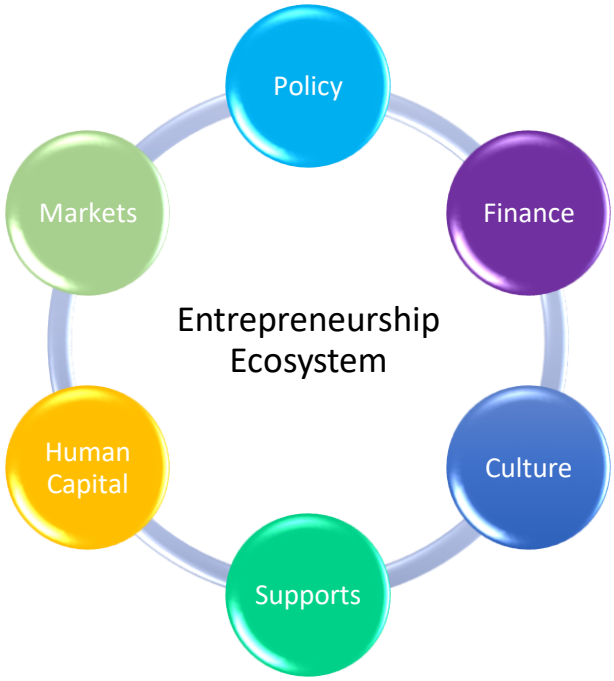

Figure 4. The six domains of the entrepreneurship ecosystem (source: Isenberg, 2011)

2.2.5 Feld's Entrepreneurship Ecosystem Model (2012)

In the existing literature, many authors have tried to explain which attributes need to be measured for the success of the entrepreneurship ecosystem. Considering previous research

and using his experience, Feld (2012) presented how a thriving entrepreneurship ecosystem can be created for the benefit of start-ups. As he stated, emphasis should be placed on the interaction of actors, available resources, and upgrading the role of government. These three points translate into nine characteristics illustrated in Figure 5 and are further described in Table 4.

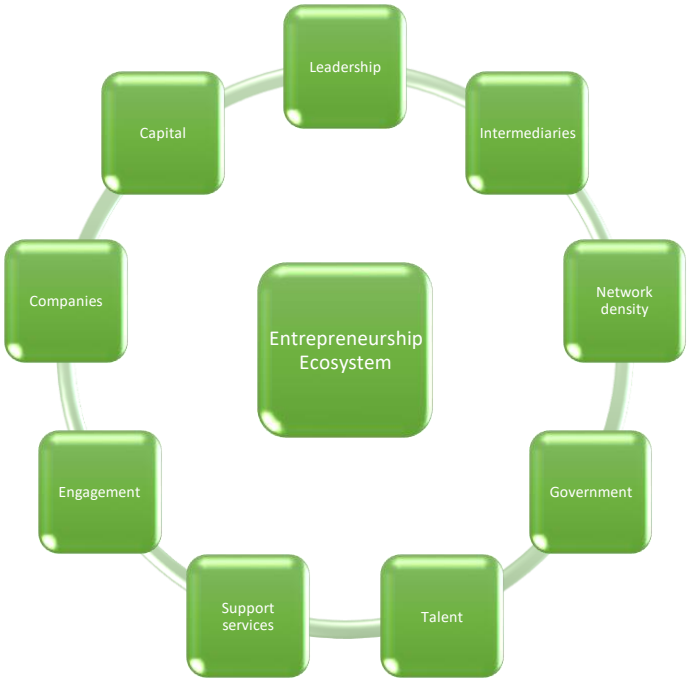

Figure 5. Nine attributes that are key elements for the entrepreneurship ecosystem (source: Feld 2012)

Table 4. The description of the most important attributes for the entrepreneurship ecosystem (source: Feld, 2012)

Attribute	Description
Leadership	Strong group of entrepreneurs who are visible, accessible, and committed to the region being a great place to start and grow a company.
Intermediaries	Many well-respected mentors and advisors giving back across all stages, sectors, demographics, and geographies as well as a solid presence of effective, visible, well-integrated accelerators and incubators.
Network Density	Deep, well-connected community of start-ups and entrepreneurs along with engaged and visible investors, advisors, mentors, and supporters. Optimally, these people and organizations cut across sectors, demographics, and

	culture engagement. Everyone must be willing to give back to his community.
Government	Strong government support for and understanding the importance of start-ups to economic growth. Additionally, supportive policies should be in place covering economic development, tax, and investment vehicles.
Talent	Broad, deep talent pool for all levels of employees in all sectors and areas of expertise. Universities are an excellent resource for start-up talent and should be well-connected to community.
Support Services	Professional services (legal, accounting, real estate, insurance, and consulting) are integrated, accessible, effective, and appropriately priced.
Engagement	Large number of events for entrepreneurs and community to connect, with highly visible and authentic participants (e.g., meet-ups, pitch days, start-up weekends, boot camps, hackathons, and competitions).
Companies	Large companies that are the anchor of a city should create specific departments and programs to encourage cooperation with high-growth start-ups.
Capital	Strong, dense, and supportive community of venture capitalists, angels, seed investors and other forms of financing should be available, visible, and accessible across sectors, demographics, and geography.

2.2.6 The eight Pillars of Entrepreneurial Ecosystem Model (2013)

In addition, a category of eight different pillars, with their components, was introduced by Foster et al. (2013) to create a flourishing entrepreneurship ecosystem, as shown in Figure 6 and further described in Table 5. These pillars focus on the formal and informal institutions, the key factors, and the access to customers in domestic and foreign markets.

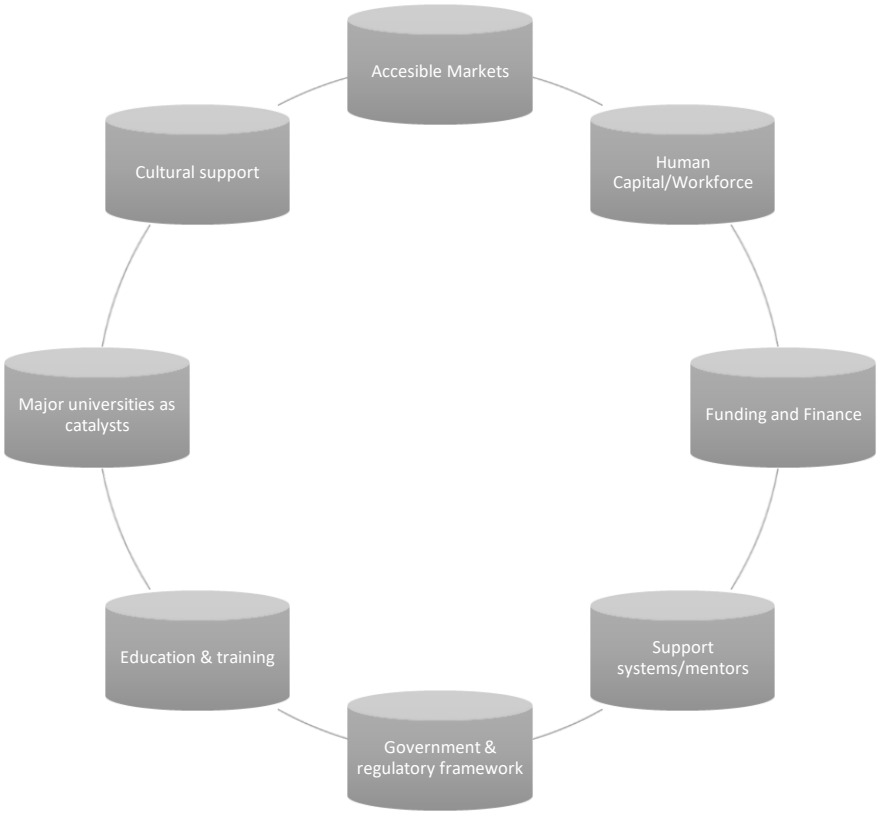

Figure 6. The eight pillars of a prosperous entrepreneurship ecosystem (Foster et al., 2013)

Table 5. Entrepreneurship ecosystem pillars (source: Isenberg, 2011)

Pillar	**Components**
Accessible markets	Domestic market: large/medium-sized/small companies as customers and governments as customers. Foreign market: large/medium/small companies as customers and governments as customer.
Human capital/workforce	Management talent, technical talent, entrepreneurial company experience, outsourcing availability, and access to immigrant workforce.
Funding & finance	Friends and family, angel investors, private equity, venture capital and access to debt.
Support systems/mentors	Mentors/advisors, professional services, incubators/accelerators, and networks of entrepreneurial peers.

Government & regulatory framework	Ease of starting a business, tax incentives, business-friendly legislation/policies, access to basic infrastructure, access to telecommunications/broadband and access to transport
Education & training	Available workforce with pre-university education, available workforce with university education and those with entrepreneurship-specific training
Major universities as catalysts	Promoting a culture of respect for entrepreneurship, playing a key role in idea-formation for new companies and playing a key role in providing graduates to new companies
Cultural support	Tolerance for risk and failure, preference for self-employment, success stories/role models, research culture, positive image of entrepreneurship and celebration of innovation

2.2.7 Mason's and Brown's Entrepreneurship Ecosystem Model (2014)

Based on Isenberg's (2011) research, Mason and Brown (2014) categorised and analysed the aspects that policy makers should target to create a successful entrepreneurship ecosystem into four groups as shown in Figure 7: (1) the entrepreneurial actors within ecosystems; (2) the entrepreneurial resource providers within ecosystems; (3) the entrepreneurial connectors within ecosystems; and (4) the entrepreneurial orientation with ecosystems. Some examples of these groups are found in Table 6.

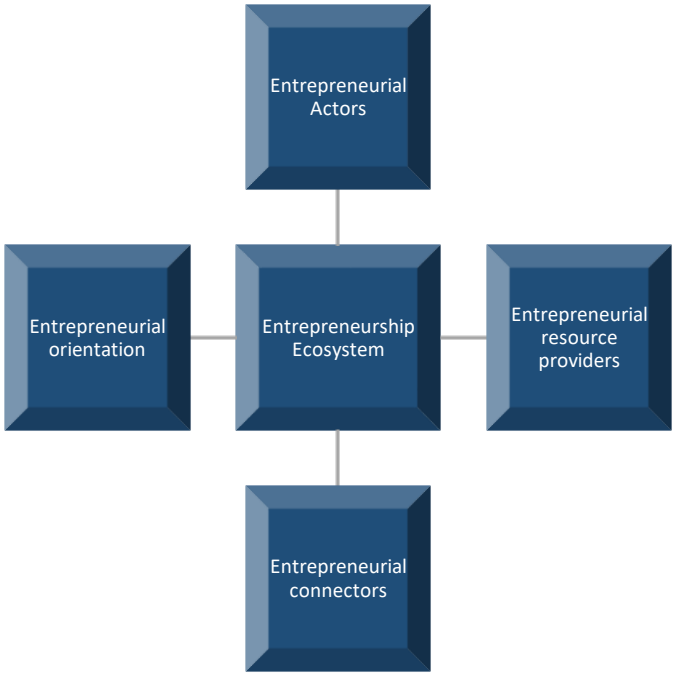

Figure 7. Aspects of attention in the entrepreneurship ecosystem (Mason and Brown, 2014)

Entrepreneurial actors within ecosystems

Depending on the geographical location, policies are implemented to help new entrepreneurs (Bennett, 2008). Entrepreneurs need guidance on the issues they might need to address in each stage of their lifecycle (Roper and Hart, 2013). In addition, policies seek to provide availability of funding and network connections such as business angels and mentors to start-ups (Mason and Brown, 2014).

Entrepreneurial resource providers within ecosystems

In the entrepreneurship ecosystem, venture capital firms, business angels, and banks are financing providers seeking to help entrepreneurs. It is crucial for SMEs (Small and medium-sized enterprises) to access capital through linkages with peer-to-peer lending, invoice-based finance, and crowdfunding (Mason & Brown, 2014). As Isenberg (2011) stated, start-ups need to go through different stages to establish themselves, while Amini et al. (2010) highlighted the importance of access for small companies in the stock market.

Entrepreneurial connectors within ecosystems

The entrepreneurial network seeks to connect components that belong to different ecosystems. These can be formal organizations that follow regulations or informal ones that promote entrepreneurial communities. Moreover, the role of individual connectors is critical for the entrepreneurship ecosystem.

Entrepreneurial orientation with ecosystems

Isenberg (2011) identified culture as a critical element for the entrepreneurship ecosystem, while Venkataraman (2004) asserted that a small number of entrepreneurs hurt a country's economy. For a higher level of entrepreneurship, the number of entrepreneurs should be increased while entrepreneurship is significant for the education sector (Mason and Brown, 2014).

Table 6. Key actors and inter-relationships within entrepreneurial ecosystem (source: Mason and Brown, 2014)

Components	Examples
Entrepreneurial actors	Supports and mentoring services for: -Nascent (start-up) entrepreneurs -Novice (early-stage) entrepreneur -Serial and portfolio entrepreneur Business incubators and co-working spaces Networking and accelerator programs
Entrepreneurial connectors	Professional associations, CCIs Entrepreneurship clubs and start-up communities Business enterprise canters Investor-investee matching services Business brokers
Entrepreneurial resource providers	Financial providers (e.g., banks, venture capital) Business angel networks Crowd funding and peer-to-peer lending Stock market access for small companies

	Linkages to large firms Linkages to universities, R&D canters
Entrepreneurial culture	Social status of self-employment, small business, and entrepreneurship Role models Entrepreneurship education Business migration programs Failure tolerance and innovation embracing

2.2.8 Koltai's Entrepreneurship Ecosystem Model (2014)

Another model for the success of the entrepreneurship ecosystem was created by Koltai (2014). Figure 8 illustrates six pillars and six types of actors. The six pillars are: (Identify, Train, Connect & Sustain, Fund, Enable, Celebrate). The six types of actors involved in the ecosystem activity are: (NGOs, Foundations, Academia, Investors, Government, Corporations). As he reported, the entrepreneurship ecosystem can be successful based on the interconnection of these pillars and actors. The actors are further elaborated in Table 7.

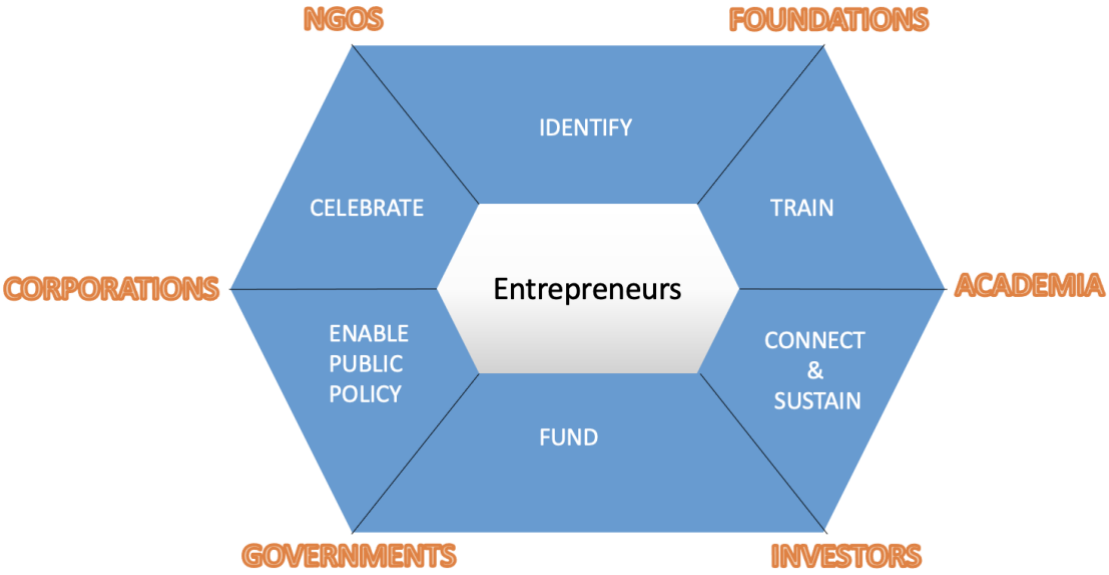

Figure 8. Pillars and actors of the entrepreneurship ecosystem (source: Koltai, 2014)

Table 7. The description of pillars of the entrepreneurship ecosystem

Pillars	Description
Identify	The identification of new ideas and entrepreneurs by investors.
Train	The high educational support to improve entrepreneurs' skills.
Connect & sustain	The efficiency of the network and the mentorship by incubators.
Fund	Access to capital by financial support.
Enable public policy	Formulate regulations that have an impact on a business.
Celebrate	The recognition of the value of entrepreneurship.

2.2.9 The entrepreneurship ecosystem of Gem (2017)

Start-up communities are subsets of entrepreneurship ecosystems, and their development depends on multiple vital attributes. These attributes differ based on the personal knowledge of each researcher (Corrente et al., 2018). The World Economic Forum (WEF) introduced 12 attributes presented in Table 8.

Table 8. Attributes of successful entrepreneurship ecosystem (source: GEM, 2017)

Attributes	Description
"Entrepreneurial Finance" [FINANCE]	represents the availability of financial resources for small and medium enterprises (SMEs).
"General Policy" [POLICY]	the extent to which public policies support entrepreneurship as a relevant economic issue.
"Regulation" [REGUL]	the extent to which public policies support entrepreneurship. Taxes and regulations are either size-neutral or encourage new firms and SMEs.
"Government Programs" [PROGRAM]	the presence and quality of programs directly assisting SMEs at all levels of government (national, regional, municipal).
"Primary & Secondary Education" [EDU]	the extent to which training in creating and managing SMEs, i.e., entrepreneurship

	education, is incorporated within the education and training system at basic school (primary and secondary).
"Post-Secondary Education" [H-EDU]	the extent to which training in creating and managing SMEs, i.e., entrepreneurship education, is incorporated within the education and training system at postsecondary levels (higher education, such as vocational education, college, business schools, etc.).
"R&D Transfer" [TRANSFER]	the extent to which national research and development (R&D) will lead to new commercial opportunities and is available to SMEs.
"Commercial Infrastructure" [COMMER]	the presence of property rights, commercial, accounting, and other legal and assessment services, and institutions that support or promote SMEs.
"Internal Market Dynamics" [DYNAMICS]	the level of change in markets from year to year.
"Internal Market Openness" [OPENNESS]	the extent to which new firms are free to enter existing markets.
"Physical Infrastructure" [PHYSICAL]	the ease of access to physical resources—communication, utilities, transportation, land, or space—at a price that does not discriminate against SMEs.
"Cultural and Social Norms" [CULTURE]	the extent to which social and cultural norms encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income.

2.2.10 Spigel's Entrepreneurship Ecosystem Model (2017)

The attributes mentioned earlier, principles, and pillars present an alternative approach that focuses on people, networks, and institutions. Spigel (2017) listed these attributes in three categories: (1) cultural attributes, (2) social attributes, and (3) material attributes. It is worth noting that these categories interact and can be reproduced through their interconnection. In the same line of thought with Feld (2012), he underlined: networks, capital, support services, and talent while adding culture, mentors and role models, open market, university, policy, infrastructure, and entrepreneurship (Figure 9).

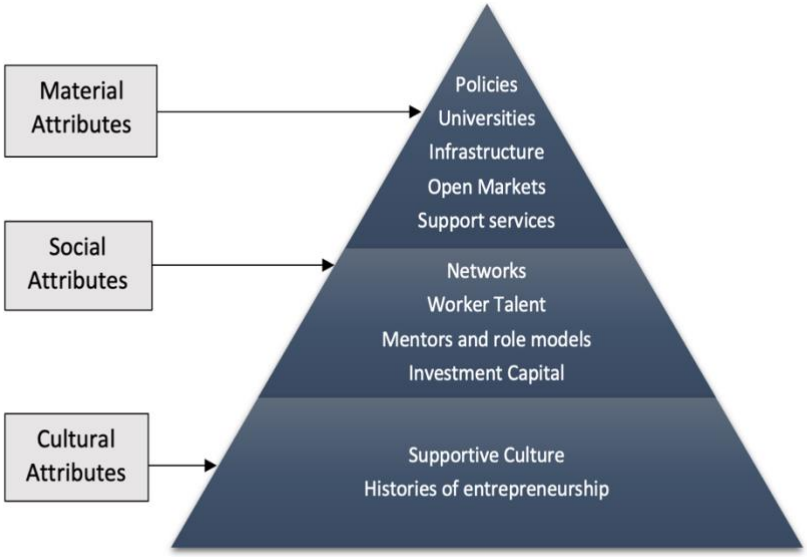

Figure 9. Attributes that contribute to a friendly entrepreneurship ecosystem and their relationship (source: Spigel, 2017)

2.2.11 The Proposed Entrepreneurship Model for this research

More authors have put effort to find the key success factors of the ecosystem. Van De Ven (1993) focused on ten attributes: availability of finance, marketing, distribution process, regulations and technology, resources, labour, and manufacturing. On the other hand, Neck et al. (2004) and Cohen (2006) supported the significance of five other elements like talent, networks (formal & informal), capital services (e.g., the flow of services provided by an asset),

governments and universities. Although there are many models, the model by Feld (2012) seems to fit better in this research. He has investigated in-depth aspects of the entrepreneurship ecosystem, such as the key actors, the significant recourses, and the government's contribution. At the same time, this model has also been used in similar research (Salimi, 2021). It should also be noted that by identifying the key actors and how they are linked to create a supportive entrepreneurship ecosystem, a good model emerges (Isenberg, 2011).

2.3 What are the challenges of the entrepreneurship ecosystem, and how does a flourishing ecosystem emerge

Even if the conditions are favourable for start-ups, challenges should be addressed in the entrepreneurship ecosystem regarding aspects such as policy. Government and non-government actors should work hard and focus on policies that relate not only to start-ups establishment but also to their long-term survival and success (Mason and Brown, 2014). On the other hand, Feld (2012) asserted that government should not be the leader of this effort, and start-ups are vulnerable if this happens. He also reported that the success of the entrepreneurship ecosystem depends on the experienced entrepreneur's involvement.

According to Isenberg (2011), the entrepreneurship ecosystem focuses on firms' growth and entrepreneurial activity, offering a different view than earlier approaches. As a result, policy should be implemented in light of this idea. In addition to implementing appropriate policies, the entrepreneurship ecosystem should balance the cooperation of large and small companies and stimulate the creation of new start-ups. In previous studies, authors have highlighted the impact of established companies on developing the entrepreneurship ecosystem. Initially, firms attract skilled workers from different locations (Feldman et al., 2005). After further improving their skills, workers may create their start-ups, and this contributes to the evolution of the entrepreneurship ecosystem (Mason and Brown, 2014). As Isenberg (2013) stated, "you simply cannot have a flourishing entrepreneurship ecosystem without large companies to cultivate it, intentionally or otherwise."

The way a thriving entrepreneurship ecosystem is created remains a matter of debate (Braunerhjelm and Feldman, 2004). According to Isenberg (2011), only a few successes are required for the entrepreneurship ecosystem to be supported by business angels and venture capitalists. Moreover, effective adaptation to change separates successful from unsuccessful

ecosystems (Mason and Brown, 2014). To identify what needs to be improved, policy makers should measure the efficacy of attributes in the ecosystem. Mason and Brown (2014) stated that culture, finance, universities, and service providers (e.g., lawyers, accountants, recruitment agencies, and business consultants) are significant features of entrepreneurship ecosystems. On the contrary, Feld (2012 underestimated universities' involvement in entrepreneurial activities and pointed out students' contribution to the ecosystem's success.

Even if the entrepreneurship ecosystem has not been investigated in-depth, many authors explained its benefits on creating value at the regional level (Fritsch, 2013; Tsvetkova, 2015). For instance, Spigel (2015) supported those cohesive systems that can lead to a successful ecosystem while Mack and Mayer (2015) supported Isenberg (2011) and Mason (2008) and underlined the importance of success on the final entrepreneurship ecosystem.

2.4 A general overview of the entrepreneurship ecosystem in the Netherlands

Singh & Ashraf (2020) researched the measurement of the entrepreneurship ecosystem by collecting data from different economies from 2000 to 2017. Over time, The Netherlands showed gradual improvement in the entrepreneurship ecosystem. Technological development, commercialisation, and governmental support and policies contributed to the economy's efficiency. In the same line, Stam (2014) supported that the entrepreneurship rate was rapidly increased, naming this phenomenon the Dutch Entrepreneurship Miracle. According to the Global Entrepreneurship Index data, even if the Netherlands remains one of the most entrepreneurial countries, there is room to optimise its weaknesses (Acs et al., 2017). Although the Netherlands presents high growth entrepreneurship, this comes from individual entrepreneurs and not from the rise of start-up companies (Stam, 2014). The Dutch economy was characterised as dynamic, and the labour market development was observable (Stam, 2014). However, even if Singh and Ashraf (2020) stated that the Dutch economy was the second most innovative worldwide, Stam (2014) presented the Dutch Entrepreneurship Paradox. He reported stagnation in the innovation sector, although the number of start-ups has improved over the last years (Stam, 2014). Considering how crucial the concept of the entrepreneurial ecosystem is for the Dutch economy, policy makers focused their attention on it. In detail, identifying the entrepreneurship ecosystem in the current situation, combined with new policies and regulations, can lead to the advancement of entrepreneurship (Khattab & Al-Magli, 2017). In the past, several efforts have been made so that the ecosystem can improve

the operation of start-up companies without this yielding any desired result (Stam & Gerritsen, 2009).

In conclusion, many scholars explained that start-ups require a different environment from high growth firms due to the utilisation of distinct recourses and that is what the government of the Netherlands should consider (Acs and Mueller, 2008; Hathaway, 2013; Motoyama and Danley, 2012). In this study, the field of focus is on the food sector, so it is necessary to elaborate on this field.

2.5 The food sector in the Netherlands and need for improvement

One of the most growing sectors in the Netherlands concerns the agriculture industry and, more specifically, the food sector (Long et al., 2018). This is proved by the numbers from the food economic report of the Netherlands in 2017. The number of companies in the food sector was increased from 5,210 to 5,275 in a year (Berkhout, 2018). Growing sales were a major factor in increasing the share of the food sector up to 20% of the total revenue in the Netherlands. From the perspective of Omta and Fortuin (2013), innovation was one of the factors that played a significant role in the evolution of the Dutch food sector. The result was that the Netherlands rose in the rankings along with France as the European countries with the highest exports of food worldwide. Mulder and Kupper (2007) referred to the contribution of Dutch education in agri-food sector by using as an example the variety of food programs the Wageningen University and Research provides. In addition, the author pointed out the correlation of high-level education with the steady growth of food production in the Netherlands.

Regarding the complexity of the food sector, capabilities linked to entrepreneurship can be efficient for profitability and sustainability (Long et al., 2018; Mulder and Kupper, 2007). However, Berkum (2005) distinguished how the Dutch government applied policy in the food industry in the first years of the 21st century and underlined the focus on quality and new market trends. The need for general improvement in agri-food sector creates pressure for the start-ups due to the minimum support and financial reward they were receiving the previous years. According to Long et al. (2018), the contribution of external actors such as the government remained low for an economically crucial sector like food.

2.6 Entrepreneurial start-ups and the contribution of large companies

Start-ups that increase their employment by 10% annually and start with no less than ten employees are characterized as high-growth start-ups. The contribution of entrepreneurial firms to a country's economy is evidenced by the promotion of growth, the expansion of competition, and the efficient allocation of resources (Mason and Brown, 2014). According to Storey and Greene (2010), the evolution of small start-ups into large enterprises reflects the level of entrepreneurship. High growth start-ups are the main focal point of the entrepreneurship ecosystem, supporting that entrepreneurship is a critical source of development, efficiency, and employment (Mason and Brown, 2014; World Economic Forum, 2013). However, the competition between start-ups is so big that special programs focus on improving their function. More specifically, they target to increase their innovation while minimizing the finance risk (Mason and Brown, 2014). As well as that, large companies also contribute to start-ups development by providing resources to improve the entrepreneurship ecosystem (Brown et al., 2014). Isenberg (2011) disagreed with the program's assistance as he argued that start-ups would be unprepared for issues they might deal with in the future. For this reason, start-ups should concentrate on expanding their network density instead of relying on capital from programs that will temporarily help their proper function (Brown et al., 2014).

2.7 The lifecycle of entrepreneurial start-up firms

Start-ups aim first to survive and then to grow during their life cycle. Salamzadeh (2015) asserted that the life cycle of start-ups consists of three stages: bootstrapping, seed, and creation stage. Figure 10 illustrate these stages, while later, these are further explained.

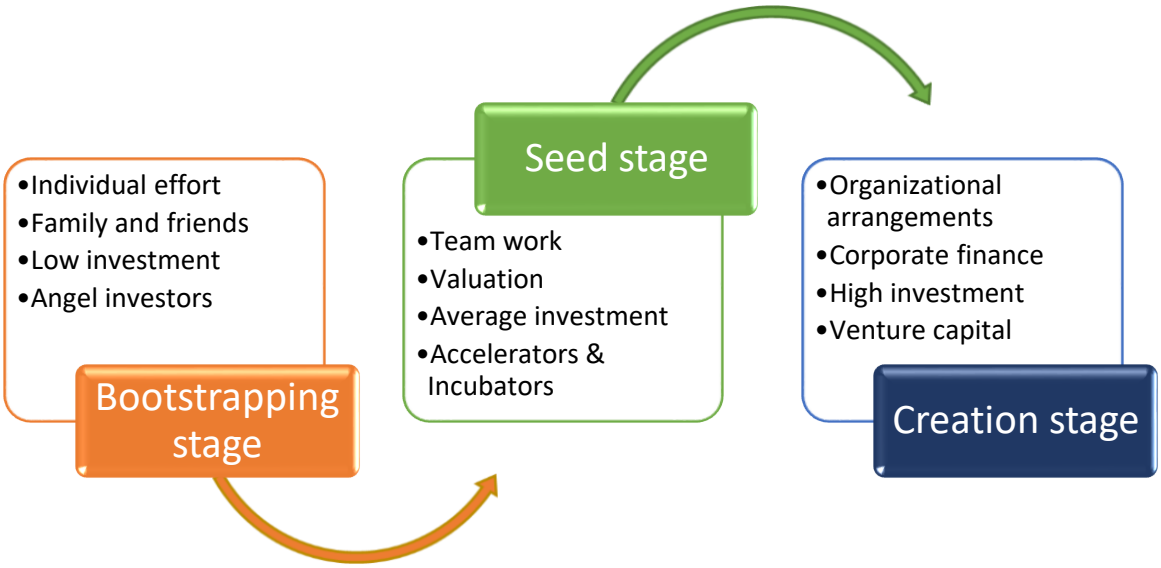

Figure 10. The three stages of start-ups life (source: Salamzadeh, 2015)

(1) Bootstrapping stage

This is the first stage of a start-up lifecycle. The risk is higher since the entrepreneurs put a lot of individual effort into developing their idea without the appropriate funds. Most of the time, funds are provided by the family and friends that seek to support the entrepreneur. In addition, angel investors might provide financial backing in exchange for ownership and earnings. According to Freear et al. (2010), bootstrapping is the stage that includes all the processes to build a company from nothing without borrowing, while Brush et al. (2007) contended that the purpose of this stage is to get into customers' minds and promote the feasibility of the service or the product.

(2) Seed stage

Completing the first stage, the start-up gets in the second stage called the "seed-stage''. A considerable percentage of start-ups fail in this stage due to the high uncertainty (Salamzadeh, 2015). The characteristics of this stage are the teamwork that will evolve the start-up, the valuation of the start-up, the average investment that comes from early investors, and the support from accelerators and incubators. As a rule, accelerators contribute to start-ups' growth

while incubators focus on innovation, demonstrating an attractive business model. In case start-ups get support, the possibility to survive and get through the next stage is higher.

(3) Creation stage:

The final stage of the start-up lifecycle is the creation stage. It includes the organizational arrangements that need to be done to achieve the start-up's goals (Salamzadeh, 2015). Corporate finance is the primary choice and manages the finance and its sources. At the same time, high investment is also provided by venture capital firms that evaluate the start-up's potential.

2.8 Challenges of start-ups

As Vesper (1990) indicated, the "high rate of failure" of start-ups should concern the entrepreneurs while Gómez (2007) added a set of "start-up problems" that need to be addressed in every stage of their life cycle as they were described. If this happens, start-ups can turn into successful companies and contribute to the region's economy- "success stories" (Martinsons, 2002). Bad management and the lack of capital seem to be two of the most critical factors in the failure of start-ups. Through their life cycle, start-ups face four categories of challenges that will be elaborated on below.

(1) Financial challenges

This is the most common challenge a start-up faces in the three stages of its life cycle and is responsible for the most failures in entrepreneurship (Colombo and Piva, 2008; Salamzadeh, 2015; Tanha et al., 2011). Isolating the three stages is more effortless for start-ups to locate these obstacles and analyse how to overcome them. In the bootstrapping stage, the potential investors (e.g., family and friends) need to be persuaded, while the funds might not be enough to implement the idea. Later, in the seed stage, the entrepreneur should look for appropriate angel investors and weigh the percent return on the money they want to invest in the start-up. Finally, in the creation stage, the entrepreneur must find high investors who share the profits with them.

(2) Human resources

An entrepreneur can create one start-up alone or in cooperation with others. Employees from different sectors must contribute and feel a significant part of the start-up. If a human-resources department (HR department) does not exist, the founder should take on the role of negotiator. By showing guidance, the employees are likely to minimise mistakes that might lead to failure (Salamzadeh, 2015).

(3) Support mechanisms

Every start-up needs support in the stages of its life. Investors seek private equity stakes, while incubators provide mentoring and guidance depending on the type of support (e.g., financial). Not having access to sources and resources often leads to failure and, therefore, a challenge for start-ups. (Salamzadeh, 2015).

(4) Environmental elements

The attributes of the entrepreneurship ecosystem that were presented by Feld (2012) in Chapter 2 can have a considerable impact on a start-up's function. When the ecosystem is supportive, start-ups can achieve their goal and be successful, while in any other case, the risk is high. As Bruton and Rubanik (2002) and Gelderen et al. (2005) stated, the ecosystem is more challenging for start-ups than established firms.

2.9 Success measures of start-ups

For the start-ups to survive, they need entrepreneurial knowledge on how to get through the first stages of their life cycle. The conditions under which a start-up rises are related to the attributes of the entrepreneurship ecosystem. New start-ups achieve higher success when they are capable of budling a strong network in combination with the entrepreneurial knowledge resources (Almeida and Kogut, 1999; Eisenhardt and Schoonhoven, 1996; Leyden et al., 2014).

Regarding the definition of success, (Brush and Vanderwerf, 1992; Chandler and Hanks, 1993) reported that different terms are used based on the state of evolution of each start-up. The success of start-ups can be measured based on a subjective and an objective evaluation. Referring to the former, every entrepreneur has personal goals to achieve, and the term

"success" can be perceived differently. An example could be the successful transition from bootstrapping to the seed stage. Taking a closer look at the study of Chandler and Hanks (1993), subjective and objective evaluation are linked when entrepreneurs are pleased with criteria like salary. In addition, they argued that since self-satisfaction does not fluctuate at the same levels, the indication of success cannot be reliable.

Objective measures can be interpreted by analysing data related to sales and employment growth by empirical studies. Even if in the first stage start-ups aim to survive, in the later stages (e.g., creation stage), a financial benefit like profit is more likely to be targeted. In general, objective measures are preferred, and performance appraisal should occur in every stage of start-ups' lives.

The concept of success in entrepreneurial start-ups has been investigated in depth by many other authors (Neely, 1999). Hormiga et al. (2011) believed that start-ups should pay attention to the return of investment and how sales increase annually, while Gelderen et al. (2005) highlighted the level of profit, turnover, and personal earnings the entrepreneur has from the beginning of the start-up. For higher validity, empirical research with the diverse dimensions relating to performance was supported by Wiklund and Shepherd (2005). The growth of start-ups is one of the most crucial indicators of successful start-ups (Brush and Vanderwerf, 1992; Chandler and Hanks, 1993; Fombrun and Wally, 1989; Rehm, 2016; Tsai et al., 1991). In agreement with Coad (2010), this growth is subdivided into four groups: labour, level of sales and profit, and the number of employments. Each of these indicators impacts start-ups' success and seem more beneficial than one-dimensional measurement. Finally, based on the study of Salimi (2021), four dimensions were included in the measure of success: market share, sales growth, profitability, and employment growth. In Table 9 some of the success measurements are presented.

Table 9. Measures of success based on different authors (source: Rehm, 2016)

Author(s)	Title	Sample performance	Determinants of business
Brush and Vanderwerf (1992)	"A comparison of methods and sources for obtaining estimates of	66 manufacturing firms, 4-6 years' old	Annual sales, number of employees, return on

	new ventures performance"		sales, growth in sales, growth in employees
Chandler and Hanks (1993)	"Measuring the performance of emerging business: A validation study"	120 manufacturing businesses, founded between 1980 - 1991	Growth, Business volume
Fombrun and Wally (1989)	"Structuring small firms for rapid growth"	95 cross-sectional U.S. firms	Strategic orientation and degree of product diversity
Tsai et. al. (1991)	"Effects of strategy and environment on corporate venture success in industrial markets"	Industrial markets	Culture, climate, corporate support, structure and venturing effort
Morgan and Strong (2003)	"Business performance and dimensions of strategic orientation"	149 high-technology, industrial manufacturing firms, medium and large companies	Return on investment, sales growth, market share, customer satisfaction, competitive position, customer retention
Wiklund and Shepherd (2005)	"Entrepreneurial Orientation and Small Business Performance: A Configuration Approach"	413 Swedish firms from manufacturing, professional services and retail, small businesses	Financial performance measures: cash flow relative to competitors, profit, sales; Growth measures: sales and employee growth, sales, and employee growth relative to competitors
Hughes and Morgan (2007)	"Deconstructing the Relationship Between Entrepreneurial Orientation and Business Performance at the	211 high-technology firms located within business incubators	Customer performance (customer acquisition, customer retention), product performance (sales, market share)

	Embryonic Stage of Firm Growth"		
Wiklund et. al. (2009)	"Building an integrative model of small business growth"	413 Swedish firms from manufacturing, professional services and retail, small businesses	Employment growth, sales growth, sales growth compared to competitors, value growth compared to competitors

Considering the above studies, five multidimensional concepts will be examined to measure the success of start-ups: (1) market share, (2) sales growth, (3) profitability, (4) employment growth, and (5) return on investment (ROI). For more detail, market share shows the size of a start-up in relation to its industry and its competitors. Sales growth and employment are observed in most lists and are necessary to include in the measures of success. Finally, profitability and return on investment highlight the effectiveness of a start-up's financial performance, indicating its efficiency level.

2.10 Key concepts

Entrepreneurship ecosystem

The entrepreneurship ecosystem consists of two components: *Entrepreneurship* and *Ecosystem*. The former is a process in which individuals explore opportunities and take financial risks to gain profit (Shane and Venkataraman, 2000; Stam and Spigel, 2016). The latter is a complex network of living organisms but is not taken with this sense. For the concept of the entrepreneurship ecosystem, many definitions have been provided. Table 10 presents some of the most important definitions, referring also to their authors.

Table 10. Multiple definitions of the entrepreneurship ecosystem (source: Malecki, 2017)

Author	Definition
Cohen (2006)	Sustainable entrepreneurial ecosystems are defined as an interconnected group of actors in a local geographic community committed to sustainable development through the support and facilitation of new sustainable ventures. (p. 3)
Isenberg (2010)	The entrepreneurship ecosystem consists of a set of individual elements—such as leadership, culture, capital markets, and open-minded customers—that combine in complex ways. (p. 43) Ignoring the interconnected nature of the ecosystem elements can lead to perverse outcomes. (p. 50)
Isenberg (2011)	This entrepreneurship ecosystem consists of a dozen or so elements (which we consolidate into six domains for convenience's sake; see the diagram) that, although they are idiosyncratic because they interact in very complex ways, are always present if entrepreneurship is self- sustaining. So, although the combinations are always unique, for there to be self- sustaining entrepreneurship, you need conducive policy, markets, capital, human skills, culture, and supports. (p. 6)
Feld (2012)	The Boulder thesis states that a prosperous ecosystem has four characteristics: (a) it is led by entrepreneurs; (b) it is inclusive where everyone is welcomed; (c) the involved people are committed long term (at least 20 years) to the ecosystem; and (d) there are many opportunities for gathering, that is, a lot of events. (pp. 25–28)
Isenberg (2014)	An ecosystem is a dynamic, self-regulating network of many different types of actors. In every entrepreneurship hotspot, there are important connectors and influencers who may not be entrepreneurs themselves.
Stam (2015)	A set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship (p. 1765)

	The entrepreneurial ecosystem concept emphasizes that entrepreneurship takes place in a community of interdependent actors. (p. 1761) The systemic conditions are the heart of the ecosystem: networks of entrepreneurs, leadership, finance, talent, knowledge, and support services. The presence of these elements and the interaction between them predominantly determine the success of the ecosystem. (p. 1766)
Audretsch and Belitski (2017)	We define systems of entrepreneurship (further ecosystem) as institutional and organizational as well as other systemic factors that interact and influence identification and commercialization of entrepreneurial opportunities. (p. 2)
Cukier et al. (2016)	We define a start-up ecosystem as a "limited region within 30 miles (or 1-hr travel) range, formed by people, their start-ups, and various types of supporting organizations, interacting as a complex system to create new start-up companies and evolve the existing ones." (p. 1)
Mack and Mayer (2016)	EE are defined as the interacting components of entrepreneurial systems, which foster new (2016) firm creation in a specific regional context. (p. 2120)
Gauthier, Penzel, and Marmer (2017)	We defined ecosystems ... around the concept of a shared pool of resources generally located within a 60-mile (100-km) radius around a center point. (p. 24)
Roundy, Brockman, and Bradshaw (2017)	Communities of agents, social structures, institutions, and cultural values that produce and Bradshaw (2017) entrepreneurial activity (p. 99)
Spigel (2017a)	Entrepreneurial ecosystems ... are the union of localized cultural outlooks, social networks, investment capital, universities, and active economic policies that create environments supportive of innovation-based ventures. (p. 49) Entrepreneurial ecosystems are combinations of social, political, economic, and cultural elements within a region that support the development and growth of innovative start-ups and encourage

	nascent entrepreneurs and other actors to take the risks of starting, funding, and otherwise assisting high-risk ventures. (p. 50)
Theodoraki and Messeghem (2017)	The entrepreneurial ecosystem includes three dimensions: actors who form it and their Messeghem (2017) interactions (formal and informal network), physical infrastructure, and culture. (p. 50). The entrepreneurial ecosystem may be described as a generic context aiming to foster entrepreneurship within a given territory. .... Therefore, it consists of a horizontal network (customers and providers) and a vertical network (competitors and complementors). .... It also includes organizations supporting entrepreneurs: public or private funding agencies (banks, business angels, venture-capital, etc.); support entities (business incubators, consultants, etc.); research organizations (research centres, laboratories, etc.); and businesses' consortiums (active businesses, associations, and trade unions, etc.). (p. 56) The entrepreneurial ecosystem seems to be composed of both physical and non-physical elements. The latter includes elements such as regulation and entrepreneurial culture, which are, for instance, connected to geographic specificities. (p. 57)

In this research, we consider as entrepreneurship ecosystem "a set of interconnected entrepreneurial actors (both potential and existing), entrepreneurial organizations (e.g., firms, venture capitalists, business angels, and banks), institutions (universities, public sector agencies, and financial bodies), and entrepreneurial processes (e.g., the business birth rate, numbers of high growth firms, levels of "blockbuster entrepreneurship," number of serial entrepreneurs, degree of sell-out mentality within firms, and levels of entrepreneurial ambition) which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment." (Mason and Brown, 2014 p. 9)

Entrepreneurial start-up firms

According to Luger and Koo (2005), three criteria should be considered to define the entrepreneurial start-up firms: (1) new, (2) active, and (3) independent. As they stated, "a start-up is a business entity which did not exist before during a given time period (new), which starts hiring at least one paid employee during the given time period (active), and which is neither a subsidiary nor a branch of an existing firm (independent)". To explore in depth the concept of start-ups, Table 11 was created with some of the most common definitions.

Table 11. Multiple definitions of entrepreneurial start-up firms (source: Rehm, 2016; Spender et al., 2017)

Authors	Definition
Miller (1983)	one that engages in product-market innovation, undertakes somewhat risky ventures, and is first to come up with "proactive" innovations, beating competitors to the punch (p.771)
Blank (2010)	an organization formed to search for a repeatable and scalable business model
Klotz, Hmieleski and Bradley (2014)	a corporation in its early development and growth stages
Spender (2014)	artefacts for transforming entrepreneurial judgment into profit

In this study, referring to the term start-up, "an entrepreneurial company that is newly launched to fulfil market needs and makes a profit by creating new products, services or process" will be considered (Katila et al., 2012).

Entrepreneurial activity

Entrepreneurial activity is associated with entrepreneurship. More specifically, it is the human action by which entrepreneurs identify opportunities and generate value. The value is what the entrepreneurship ecosystem targets, while the entrepreneurship activity is the way it can achieve it (Stam and Spigel, 2016).

Experts

In this study, experts can be managers, founders, entrepreneurs, and directors that belong to the Dutch agri-food sector and have experience in this field for at least five years.

2.11 Conceptual Framework

As shown in Figure 11, this study focuses on the importance of each entrepreneurship ecosystem attribute (green frame) on five success measures (yellow frame) of start-ups in different life stages in the Dutch agri-food sector. The attributes of the entrepreneurship ecosystem are categorized into Leadership, Intermediaries, Network Density, Government, Talent, Support Services, Engagement, Companies, and Capital, while the measures of success are categorized into profitability, sales growth, employment growth, market share and return on investment.

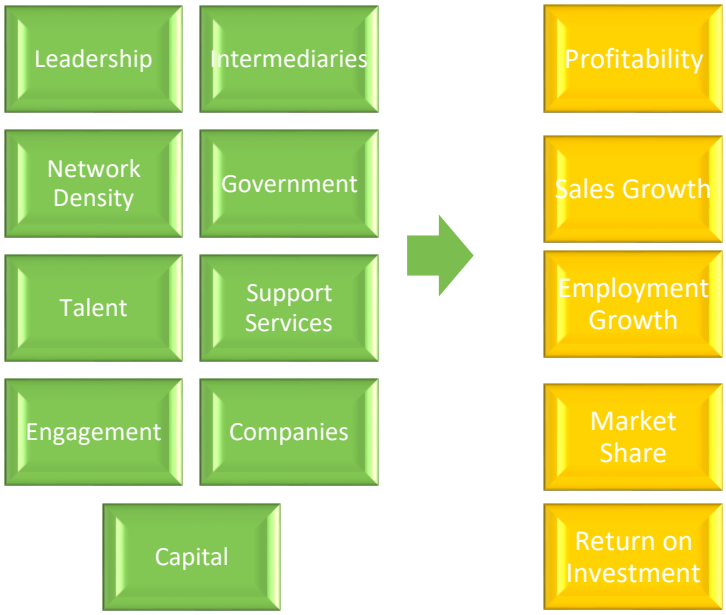

Figure 11. The conceptual framework of this research

3 Methods

This Chapter presents the methodology of the study. First, it describes how the key concepts were measured and how the data were collected and analysed to answer the research questions. Furthermore, the importance of reliability and validity is discussed as two crucial factors for the quality of quantitative research.

3.1 Research Design

In this section, the design of the research is presented. As Blumberg et al. (2014) stated, a research design or research strategy consists of the methods that have been chosen to find a solution to the central problem. In Table 12, an overview of the research design is illustrated. Below the table, further analysis of the descriptors is provided.

Table 12. The descriptors of the research design (source: Blumberg et al., 2014)

Research Design	
The purpose of the study	Descriptive
The degree to which the research question has been crystallized	Formal study
The method of data collection	• Archival sources (scientific reports, academic and journal articles, websites) • Interrogation (interview, questionnaire)
The power of the researcher to influence the variables under the study	Ex-post-facto
The time dimension	Cross-sectional study
The research environment	Field

Descriptive studies are more formalised studies with clearly stated research questions, and their purpose is to answer the who, what, when, where, and how of a topic (Blumberg et al., 2014). This research is considered descriptive since the aim is to describe the importance of various attributes of the entrepreneurship ecosystem on the success of start-ups on each stage of the start-ups' life separately. Moreover, it is formal and inductive because it intends to answer the research questions from Chapter 1 by developing a theory for each of the life stages. The

method of data collection are archival sources like source engines (e.g., google scholar) and interview questions that applied to entrepreneurs. The researcher has no control over the attributes but only reports what is happening (ex-post facto). It is a cross-sectional study since it investigates the present and doesn't repeat previous research to track changes. Finally, the research occurs under field conditions (e.g., interviews in home or workplaces) and is quantitative.

3.2 Operationalization of Concepts

In Figure 11, the key concepts of this research are presented. However, it is necessary to convert these attributes into measurable perceptions. To increase the study's reliability and validity, the creation of an operationalization table will highlight the most important concepts for the interviews, the attributes to be used for the measurements, and some indicators for the translation of these attributes into numbers (Table 13).

Table 13. The operationalization of the key concepts

Attributes	Sub-attributes	Description	Reference
Leadership	Effectiveness Vision Mission Strategy Key issues	• Leaders' ability to act innovatively • The development and communication of an inspiring vision • The definition of a mission that states what the organisation stands for • The development of a strategy aligned to the mission and vision • The structure and operational mechanisms to facilitate	(Dhar and Pethe, 2003) (Kanji and Sa´, 2001)

		the implementation of the model	
Intermediaries	Mentors Accelerators Incubators	• Mentors' ability to give advice • The contribution in development • The contribution in innovation	(Feld, 2012; Salamzadeh, 2015)
Network Density	Centrality Community	• The extent to which a start-up interacts with investors • Number of communities	(Sahoo et al., 2016)
Government	Support	• Taxes • Funding programs • Incubation programs • Supportive policies (Legislation) • Training programs for entrepreneurs	(Feld, 2012)
Talent	Talent pool Planning skills	• Number of universities • Ranking of universities • Effective decision making • How important is the learning process of new hires	(Feld, 2012; Salimi, 2021)
Support Services	Effectiveness	• Infrastructure to run start-ups (transportation, energy, telecommunication) • Friendly organisations	(Liguori et al., 2018)

Engagement	Meet-ups Pitch days Start-up weekends Boot camps Hackathon Competitions Effectiveness of those activities	• How often are they organised? • Exchange of ideas between start-ups	(Fehrer et al., 2020; Feld, 2012)
Companies	Support	• Programs that involve cooperation with start-ups. • Resources for start-ups	(Feld, 2012; Mason and Brown, 2014)
Capital	Venture capitalists Business angels Seed investors	• Funding programs • Contribution in development	(Feld, 2012)
Profitability	Amount	• Gross profit after periods of time	(Salimi, 2021)
Sales growth	Amount	• Number of sales after periods of time	(Salimi, 2021)
Employment growth	Amount	• Number of employees after periods of time	(Salimi, 2021)
Market share	Percentage	• sales of start-ups/sales of food industry	(Salimi, 2021)
Return on investment	Percentage	• Profit / Cost of investment (annual rate)	(Hormiga et al., 2011)

3.3 Research Framework

This section presents the main research activities and how these are related to each other. As it can be seen in Figure 12, there are four stages for the creation of a research framework. In the

beginning, the author described the problem and identified the knowledge gap. After reviewing the preliminary literature (theoretical research), the definition of the key concepts and their operationalisation took place. With the formation of a conceptual framework, the author visually represented the relevant concepts (attributes) and their relationship while further explored pertinent theoretical framework theories. Later, empirical research was conducted to highlight which attributes of the entrepreneurship ecosystem are essential for the experts. Finally, after analysing the importance that attributes have on the success of start-ups, the author presented the conclusion, the limitations of the study and recommendations to policy makers, experts for improving the entrepreneurship ecosystem and to authors for future research.

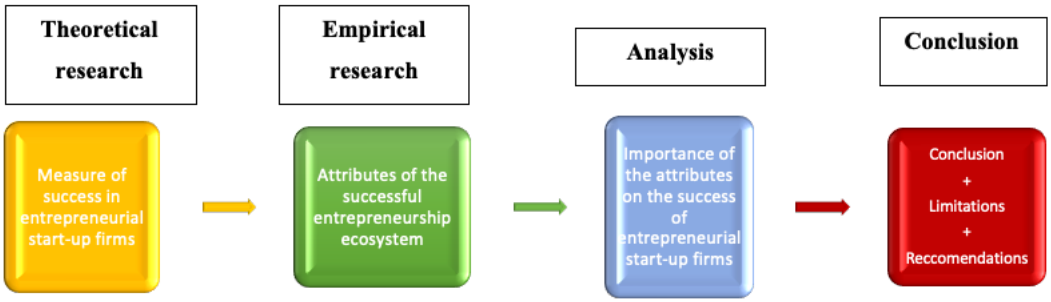

Figure 12. The research framework for the investigation of the entrepreneurship ecosystem attributes importance on the success of entrepreneurial start-up firms

3.4 Data Collection

This section describes the systematic process of gathering data for the research. Table 14 illustrates the research questions, the study of the data, the sources, and the methods are provided. Afterwards, further analysis will be presented.

Table 14. Data collection of the research

Sub-questions	Data	Source	Method
1) What are the most important attributes of the entrepreneurship ecosystem?	Attributes of a successful entrepreneurship ecosystem	Literature Review	Literature research (Scientific reports, academic and journal articles, websites)

2) What are the measures of success in entrepreneurial start-up firms?	Success measures of entrepreneurial start-up firms	Literature Review	Literature research (Scientific reports, academic and journal articles, websites)
3) What are the stages of a start-up's life?	Life stages of start-ups	Literature Review	Literature research (Scientific reports, academic and journal articles, websites)
4) What is the contribution of the attributes in the success of start-ups in each of the three stages of their lifecycle?	Attributes that considered more important than others in each stage	Experts in the food sector	Interviewing experts
5) How do the ecosystem attributes perform currently?	Current performance of ecosystem attributes	Experts in the food sector	Interviewing experts

Archival data

The first three sub-research questions relied on secondary data. The archival research was conducted based on scientific reports, websites, academic and journal articles. Sites such as Google Scholar and Web of Science were used, and even if the research focuses on the food sector of the Netherlands, qualitative and quantitative data were comprised from studies of different countries. Since the entrepreneurship ecosystem is a part of entrepreneurship, data from much previous sources were included. As Blumberg et al. (2014) explained, every research consists of a unit of analysis. Usually, people are the unit of analysis, but this is not necessarily absolute. In this study, the research units are the start-ups in the Dutch agri-food sector. Furthermore, attention should also be paid to the experts' interviews.

Empirical Data

The last two sub-research questions were based on primary data undertaken through 45-minute interviews. Due to COVID-19, the data were collected online, quickly, and without cost. The interviews were given by experts in the Dutch agri-food sector, using an online structured form. The author sent e-mails to respondents to reduce bias, explaining the interview process and describing each ecosystem attribute. In addition, experts were asked to express their opinions to test whether the ecosystem attributes, the success measures and life stages of start-ups are suitable for the research. The author answered respondents' questions to ensure that the data were reliable during the interview, while the consistency ratio was also checked.

Sample selection

In every research, the author selects a portion of a group (sample) to have access to draw conclusions about the group. Two reasons for sampling are data collection speed and accurate results because time constraints and more extended collection periods might cause bias (Blumberg et al., 2014). A sample of experts from the Dutch agri-food sector was suitable for this research. To reduce the interview time and simultaneously increase validity, the experts received an e-mail regarding the key concepts of the interviews. Finally, non-probability sampling was used since experts with an official site on the internet or closer to the researcher's area have better chances to be chosen. Table 15 presents the socio-demographic characteristics of 20 respondents that participated in this research.

Table 15. Socio-demographic characteristics

Respondents	Gender	Current Age	Current Highest Level of Education
1	Male	37	MSc
2	Male	36	Ph.D.
3	Male	27	MSc
4	Male	29	BSc
5	Male	46	MSc
6	Male	30	MSc
7	Male	27	MSc

8	Female	30	Ph.D.
9	Male	35	Ph.D.
10	Male	63	MSc
11	Male	40	MSc
12	Male	34	MSc
13	Male	47	MSc
14	Male	52	MSc
15	Male	57	Ph.D.
16	Male	53	MSc
17	Male	32	MSc
18	Male	47	BSc
19	Male	30	BSc
20	Female	40	BSc

3.5 Data analysis methods

Bayesian Best Worst-Method

It was previously reported that many authors introduced various attributes of the entrepreneurship ecosystem. In this study, the model of Feld (2012) seems to fit better in this research. Considering that this problem includes many areas such as the ecosystem attributes that have different weights for five success measures in each different life stages, an MCDM (Multiple-Criteria-Decision-Making) model is suitable to answer the research question. Furthermore, it is proper to measure the current performance of the Dutch entrepreneurship ecosystem.

According to Mohammadi & Rezaei (2020), there are many MCDM methods that an author can use as a preference elimination method, such as SMART (simple multi-attribute rating technique) and AHP (analytic hierarchy process). In this research, a new method called BWM (Best Worst Method) will be applied because it is simpler to combine with other MCDM methods and requires only a reference of 2n-3 pairwise comparisons. The small number of comparisons is necessary for overcoming inconsistency problems during the comparison of criteria. Thus, more reliable results are expected in contrast to other methods since transitivity

relations are less undermined, which further influences a greater consistency of the results. The selection of the best and worst criteria and their comparison with all the other criteria is simpler, more accurate, reduces any unnecessary comparisons and gives a structure to the problem. Moreover, the vectors in the BMW contain only integers which prevents a fundamental distance problem.

This research examined how experts of the Dutch agri-food sector perceived various attributes of the entrepreneurship ecosystem, and a group decision-making method is suitable for this purpose. Mohammadi & Rezaei (2020) asserted that group decision analysis methods could instant compute the aggregated final preferences of a group. However, BWM cannot instantly merge the preferences of a group and does not fit the aim of this study. Instead, a promising method was developed by Mohammadi & Rezaei (2020) with the name of Bayesian Best Worst-Method and can fill the gap of BWM.

Even if these two methods have identical inputs, the only difference concerns the last step (step 5) or output where Bayesian Best Worst Method simultaneously estimates the combined distribution and every individual preference.

Step 5.1 A joint probability distribution

Suppose that the DM (decision-makers) are symbolized with k (k = 1, . . ., K) and that the evaluation criteria (ecosystem attributes) are symbolized with c (C= $c_1, c_2, \ldots, c_n$). Then, A_B^K stands for "Best-to-Others" (BO) while A_W^K for "Others-to-Worst" (OW) of one DM. Assuming that the optimal weight of one DM is w^k, then after aggregation is w^{agg} while $A_B^{1:K}$ and $A_W^{1:K}$ indicate the vectors of all DM according to their BO and OW. Thus, the estimation of the joint probability distribution results from the following equation.

$$(1) \quad \mathrm{P}(w^{agg}, w^{1:K} | A_B^{1:K}, A_W^{1:K})$$

After calculating the equation (1), the probability rule (2) can be used to compute the probability of each individual variable.

$$(2) \quad P(x) = \sum_y P(x, y)$$

where x and y represent two arbitrary random variables (Mohammadi & Rezaei, 2020).

Step 5.2 Bayesian hierarchical model

The creation of the Bayesian model requires the identification of dependent and independent variables. The aggregated weight w^{agg} of a group depends on the optimal weight w^k of each DM which is primary depends on their A_B^k andA_W^k. However, the w^{agg} changes every time there is a new pairwise comparison. This results in a conditional independence between variables and a new equation (3) can be observed regarding the application of the Bayesian rule to the joint probability.

(3)

$$P(A_B^{1:K}, A_W^{1:K}|w^{agg}, w^{1:K})P(w^{agg}, w^{1:K}) = P(w^{agg})\prod_{k=1}^{K} P\left(A_W^k|w^k\right)P\left(A_B^k|w^k\right)P(w^k|w^{agg})$$

Specifying now the distribution of each element, the corresponding probability can be estimated. Therefore, $A_B^k|w^k$ and A_W^k are defined as:

$$(4)\ A_B^k|w^k \sim multinational\left(\frac{1}{w^k}\right), \forall_k = 1,2 \dots, K$$

$$A_W^k \sim multinational\ (w^k), \forall_k = 1,2 \dots, K$$

Furthermore, w^k under w^{agg} can be computed under the Dirichlet distribution:

$$(5)\ w^k|w^{agg} \sim Dir(\gamma \times\ w^{agg}),\ \forall_k = 1,2 \dots, K$$

where w^{agg} is the mean of the distribution and γ a non-negative parameter (Mohammadi & Rezaei, 2020).

Then γ which is a non-negative parameter, needs to obey the underling gamma distribution where a and b represents the shape parameters of the gamma distribution.

$$(6)\ \gamma \sim gamma\ (a, b)$$

Finally, w^{agg} abides to the Dirichlet distribution, with the parameter α = 1.

$$(7)\ w^{agg} \sim Dir(a)$$

After following these steps, the posterior distribution is estimated by using the Markov-chain Monte Carlo (MCMC) technique (Mohammadi & Rezaei, 2020).

Step 5.3 Credal ranking and Confidence level

Credal ranking is a credal ordering of every single pair of criteria (c_i, c_j), for all (c_i, $c_j \in C$) and where C symbolises the set of criteria. The consistency of the rankings can be determined by calculating the confidence level in the weight directed graph using equation (8) (Mohammadi & Rezaei, 2020).

$$(8)\ P(c_i > c_j) = \int I\left(w_i^{agg} > w_j^{agg}\right) P(w^{agg})$$

where P is the confidence or probability that c_i, is better than c_j and *I*, a conditional parameter which can only be estimated if $w_i^{agg} > w_j^{agg}$ otherwise is 0.

Using the Markov-chain Monte Carlo technique (MCMC), the CL is determined from the number of samples Q acquired.

(9)

$$P(c_i > c_j) = \frac{1}{Q}\sum_{q=1}^{Q} I\left(w_i^{agg_q} > w_j^{agg_q}\right);\ P(c_j > c_i) = \frac{1}{Q}\sum_{q=1}^{Q} I\left(w_j^{agg_q} > w_i^{agg_q}\right)$$

where w^{agg_q} represents the q[th] sample of w^{agg} from MCMC samples. If $P(c_i > c_j) > 0.5$, then the criterion *i* is more important than criterion *j* (Mohammadi & Rezaei, 2020). The total probability is equal to 1, ($P(c_i > c_j)$+ $P(c_j > c_i)$ = 1.

Using the credal ranking and the assigned confidence level (number above the arrows), the groups' perceived significance of one criterion over one another is visualized. Thus, experts will have more information about the Dutch agri-food sector and the stages of start-ups' life.

Importance-performance analysis

A way to provide information on the Dutch entrepreneurship ecosystem current performance to policy makers, government, DM, investors, and mentors is by conducting an Importance-Performance analysis. Identifying the importance level of the ecosystem attributes using the Bayesian BWM is not enough since it does not indicate anything more than what is essential for start-ups. More specifically, only a group of attributes is vital, which presents high importance but low performance. Thus, this analysis technique identifies the ecosystem attributes that need the most improvement. Using a scale from 1 (very low) to 5 (very high), experts were asked to rate these ecosystem attributes regarding their current performance on each one of the stages of start-ups in the Dutch agri-food sector. Even if there are diverse methods in the academic literature, the model of Martilla and James (1977) seems more suitable for this research (Salimi, 2021). Figure 13 presents the evaluation of the entrepreneurship ecosystem attributes based on the way they perform in the Dutch agri-food sector.

(1) Quadrant A: This area includes all the ecosystem attributes that are less important for the Dutch agri-food sector, although they highly perform. For that reason, focusing on this area is not recommended.
(2) Quadrant B: The ecosystem attributes are perceived as critical in this area while their performance level is also very high. There is already enough attention in this situation, and any additional focus could not be beneficial.
(3) Quadrant C: The ecosystem attributes combine low importance and performance, meaning that they have a low priority. Experts should not invest any resources since there are no opportunities for exploitation.
(4) Quadrant D: This area consists of the most vital ecosystem attributes that have a poor performance. In contrast with other Quadrants, focusing on this area is a high priority. Therefore, the experts should make a great effort to improve any characteristics that would contribute to the industry's evolution.

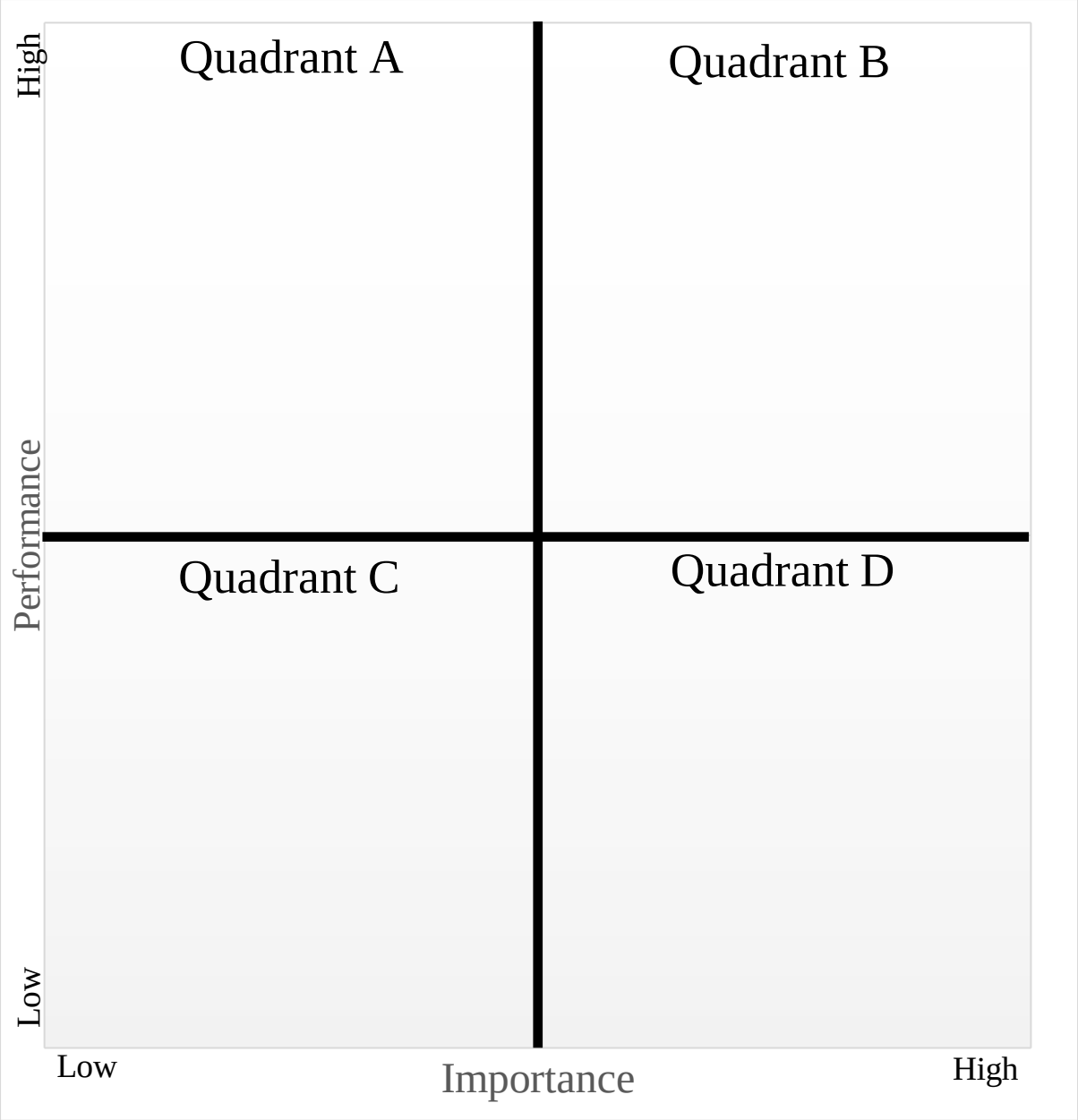

Figure 13. Importance-performance grid

3.6 Interview Techniques

The interview guide of a structured interview with experts from the Dutch agri-food sector can be found in Appendix. The interview guide includes the topic discussed in the interviews and the structured questions to be answered. Blumberg et al. (2014) identified two approaches where the researcher either observes behaviours and processes (observation approach) or communicates through interviews to record their answers (communication approach). In this study, the communication approach was used, as shown in Figure 14. Structured online

interviews were used to extend the geographic coverage and collect data from experts from different regions in the Netherlands.

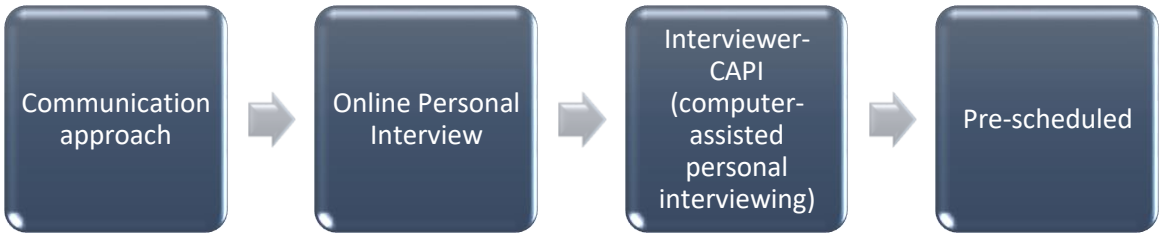

Figure 14. Communication approach of the research (source: Blumberg et al., 2014)

3.7 Reliability and Validity of Measurement Instruments

Sürücü and Maslakçi (2020) described that to obtain desired results, measuring instruments require specific qualities. Reliability and validity are two crucial factors for the quality of quantitative research. According to Heale and Twycross (2015), validity is the instrument that measures whether the quality was accurately measured and to what extent it works effectively (Anastasi and Urbina, 1997). Blumberg et al. (2014) defined reliability as an indicator of consistency of the measurement under the same conditions. The results of a study are poor if one of these two instruments is missing (Sürücü and Maslakçi, 2020). In agreement with Blumberg et al. (2014), a measurement instrument can be valid and possible reliable. Still, if it is not valid, there is no point in searching its' reliability since it does not measure what it was supposed to.

In general, there are different types of to estimate both of the factors above (Sürücü and Maslakçi, 2020). Heale and Twycross (2015) introduced the most common validity attributes, as shown in Table 16, while Blumberg et al. (2014) underlined the importance of internal and external validity. In addition, more types can be found in the study of Oluwatayo's (2012) study.

Table 16. Summary of validity types (source: Heale and Twycross, 2015)

Type of validity	Description
Content validity	The extent to which a research instrument accurately measures all aspects of a construct

Construct validity	The extent to which a research instrument (or tool) measures the intended construct.
Criterion validity	The extent to which a research instrument is related to other instruments that measure the same variables.

Regarding the reliability, three attributes are presented in Table 17 by Heale and Twycross (2015).

Table 17. Summary of reliability types (source: Heale and Twycross, 2015)

Type of reliability	Description
Homogeneity (or internal consistency)	The extent to which all the items on a scale measure one construct.
Stability	The consistency of results using an instrument with repeated testing.
Equivalence	Consistency among responses of multiple users of an instrument, or among alternate forms of an instrument.

Moreover, Blumberg et al., (2014) investigated the ways of improving low reliability, such as the standardization of the circumstances, while Sürücü and Maslakçi (2020) referred to the scales researchers should consider. Benova et al. (2020) created a helpful scheme to show how validity and reliability are linked (Figure 15).

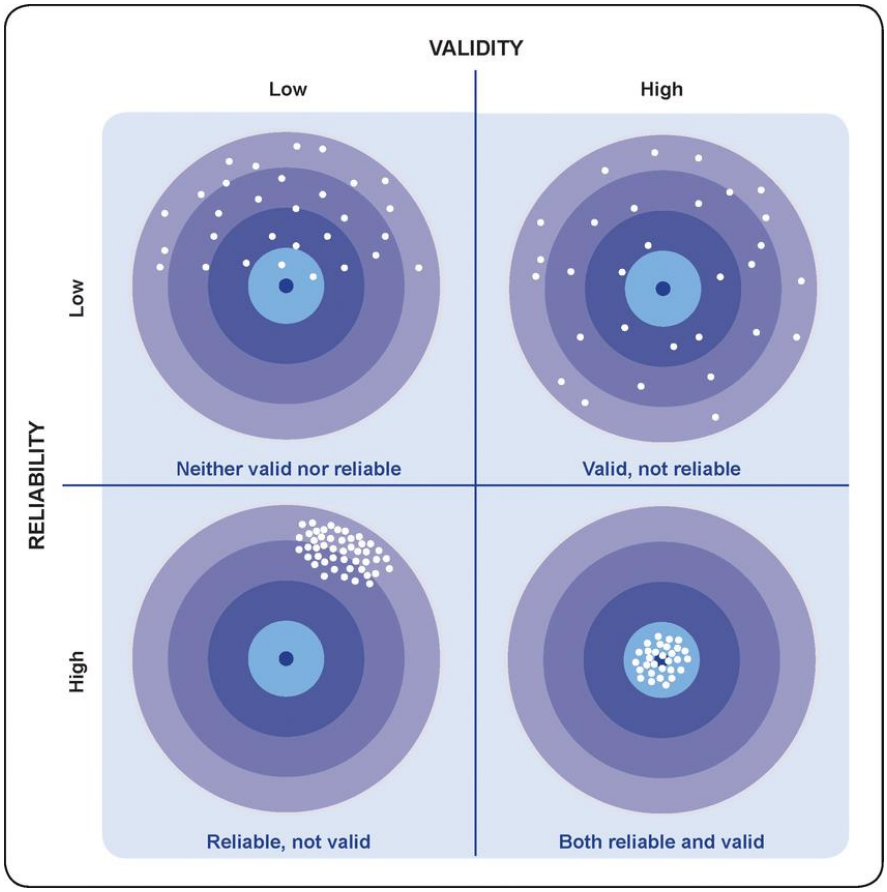

Figure 15. Validity and Reliability (source: Benova et al. 2020)

In this study, the author followed the steps below to ensure that the results will have both validity and reliability. First, the respondents received an e-mail explaining the entrepreneurship ecosystem attributes and the success measures. Moreover, they were informed about the interview's structure and the required minutes. The researcher was ready to answer any questions during the interview to decrease any bias that might impacted the results. Following the same procedure for the whole sample, the goal was to reduce the error as much as possible.

4 Results

In this chapter, the results of the research are presented based on the data of the structured online interviews to answer the research questions 4 and 5. In the first part, the ecosystem attributes and their weights are introduced for each stage and success measure. To estimate the relationship between those ecosystem attributes the credal ranking is illustrated. Finally, the

importance-performance analysis is described to give insight into the current performance of the ecosystem attributes.

4.1 Weights of the entrepreneurial attributes of ecosystem for different success measures and life stages of start-ups.

To ensure that all the pairwise comparisons are acceptable, two procedures were first carried out:

1. the calculation of the Input-based Consistency Ratio (CR) using the formula of Liang et al. (2020)
2. the comparison of the CR with the related thresholds from the research of Liang et al. (2020)

4.1.1 Profitability

Figure 16 and Table 18 provide information on the importance of ecosystem attributes in profitability, based on data obtained from structured online interviews. In the bootstrapping stage, Network Density (weight = 0.159) is the most crucial ecosystem attribute, followed by Leadership (weight = 0.150) and Talent (weight = 0.132) while Companies (weight = 0.073) and Support Services (weight = 0.072) are perceived as the least important ecosystem attributes for profitability.

In the seed stage, Network Density (weight = 0.139) remains in the first place in terms of importance, presenting a decrease in its weight, however. Capital and Leadership (weight = 0.138) are second in the significance ranking with a slight difference from first. At the bottom of the hierarchy, Companies (weight = 0.073) and Support Services (weight = 0.079) remain unimportant for profitability, with the latter showing a slight improvement.

In the creation stage, Talent (weight = 0.154) shows a remarkable increase in importance compared to the previous stages, thus taking the first place. Moreover, Leadership (weight = 0.145) and Capital (weight = 0.141) remain essential for profitability. For the first time Network Density (weight = 0.126) is far from the first places of the ranking, presenting a sharp decline in importance compared to the two previous stages. As for the ecosystem attributes that matter least to profitability, Support Services (weight = 0.082) stay insignificant while

Government (weight = 0.080) is the lowest in the rankings. Figure 16 illustrates the weights of the ecosystem attributes regarding profitability for each one of the life stages of start-ups.

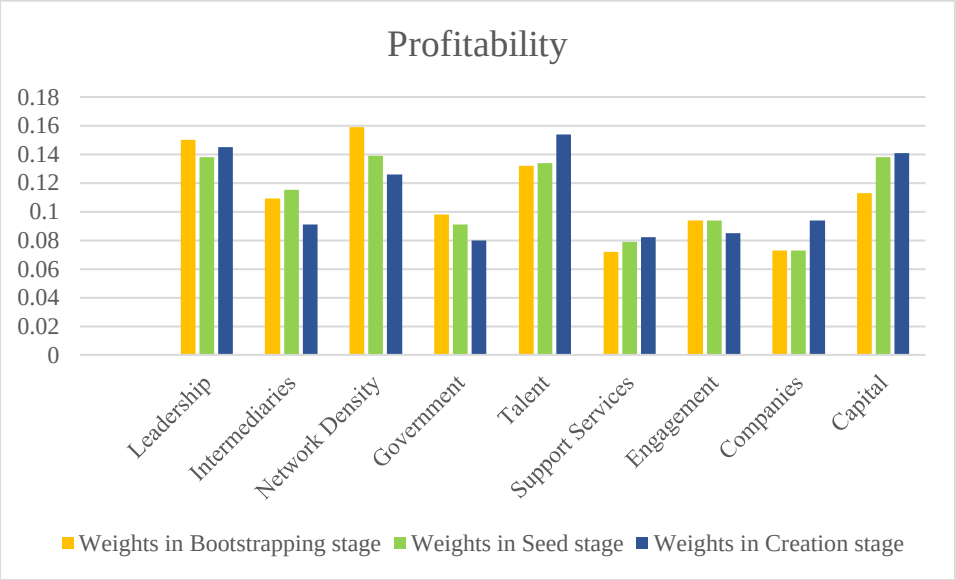

Figure 16. Weights of ecosystem attributes for profitability

Table 18. Weights of nine entrepreneurial attributes of ecosystem for profitability in Bootstrapping, Seed and Creation stage

Attributes	Weights in Bootstrapping stage	Weights in Seed stage	Weights in Creation stage
Leadership	0.150	0.138	0.145
Intermediaries	0.109	0.115	0.091
Network Density	0.159	0.139	0.126
Government	0.098	0.091	0.080
Talent	0.132	0.134	0.154
Support Services	0.072	0.079	0.082
Engagement	0.094	0.094	0.085
Companies	0.073	0.073	0.094
Capital	0.113	0.138	0.141

Figure 17 illustrates the credal ranking for the profitability success measure in the bootstrapping stage. The nodes are the ecosystem attributes, while the weights above the arrow represent the confidence level of one powerful ecosystem attribute over another. Any confidence level close to 1 indicates greater confidence in the relationship's validity

(Mohammadi and Rezaei, 2020). One credal ranking will be described for every success measure, while the rest schemes are presented in Appendix. As can be seen, Network Density is perceived as the most critical ecosystem attribute based on expert responses. At the other extreme, Companies and Support Services are the least essential ecosystem attributes for the respondents. The degree of certainty above the arrow shows that Network Density is the most critical ecosystem attribute with a confidence level of approximately 1. However, there is a confidence level of 0.65 that Network Density overrides Leadership while the latter is in absolute terms more significant than Government and Engagement with a confidence level of 1.

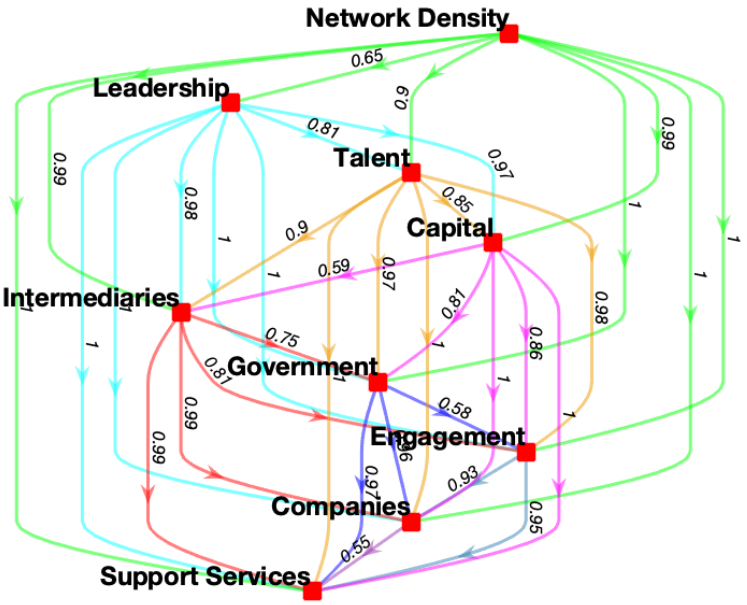

Figure 17. Credal ranking for profitability in bootstrapping stage

4.1.2 Sales Growth

Figure 18 and Table 19 show which ecosystem attributes require more attention due to their significance in terms of sales growth. In the bootstrapping stage, Network Density (weight = 0.144), Leadership (weight = 0.142), and Talent (weight = 0.132) are the most dominant ecosystem attributes, as also observed in the previous success measure. The Support Services (weight = 0.078) and the Government (weight = 0.071) are at the end of the relevant ranking.

In the seed stage, the importance of Capital (weight = 0.148) increases dramatically and thus takes the first place. Close behind is Talent (weight = 0.140), that shows considerable growth,

while Leadership (weight = 0.132) and Network Density (weight = 0.123) present a downward trend compared to the previous stage. On the other side, Support Services (weight = 0.079) and Government (weight = 0.080) remain at the bottom positions, although the latter shows an upward trend.

In the creation stage, Capital (weight = 0.162) reaches the peak of importance, followed by the upward in weight Talent (weight = 0.150) and Leadership (weight = 0.132) that remains constant. Finally, Engagement (weight = 0.084) and Government (weight = 0.082) are the least essential as Support Services (weight = 0.092) become notable in comparison to previous stages.

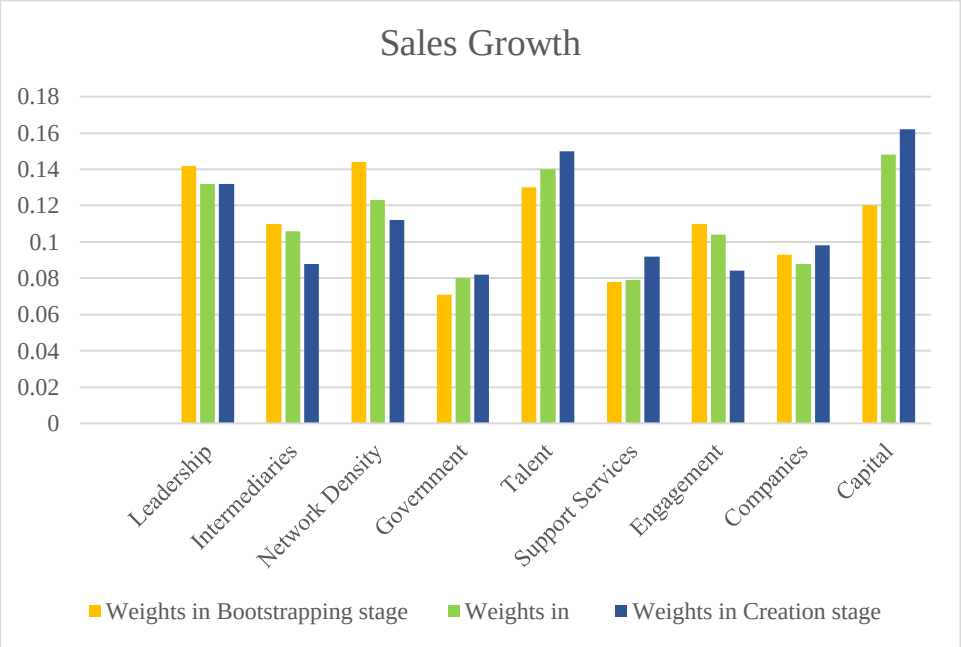

Figure 18. Weights of ecosystem attributes for sales growth

Table 19. Weights of nine entrepreneurial attributes of ecosystem for sales growth in Bootstrapping, Seed and Creation stage

Attributes	Weights in Bootstrapping stage	Weights in Seed stage	Weights in Creation stage
Leadership	0.142	0.132	0.132
Intermediaries	0.110	0.106	0.088
Network Density	0.144	0.123	0.112
Government	0.071	0.080	0.082

Talent	0.130	0.140	0.150
Support Services	0.078	0.079	0.092
Engagement	0.110	0.104	0.084
Companies	0.093	0.088	0.098
Capital	0.120	0.148	0.162

Figure 19 presents a visualization of the credal ranking for the sales growth success measure in the seed stage. Looking at the nods, Capital is the most vital ecosystem attribute while Government and Support Services are at the bottom of the ranking based on decision-makers. Although Capital is undoubtedly more important than Support services with a confidence level of 1, it is more important than Talent with a confidence of 0.64. Further, Talent and Leadership are superior to Government with a confidence of 1.

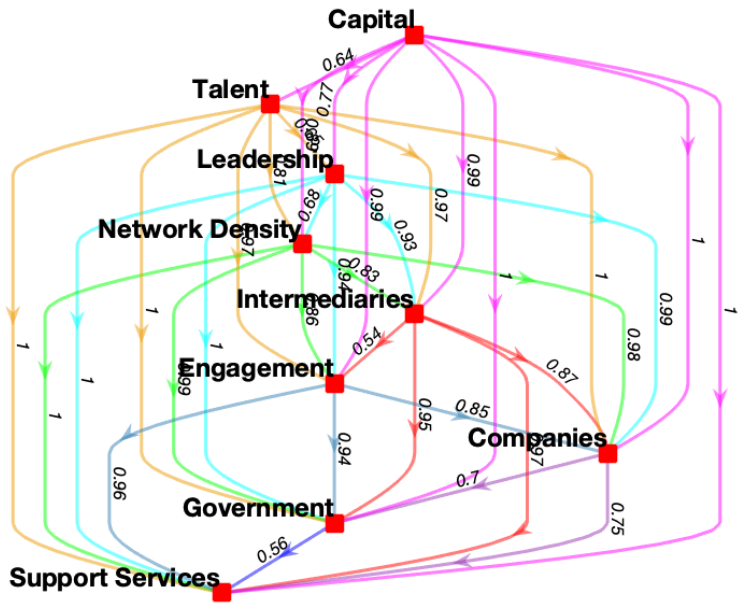

Figure 19. Credal ranking for sales growth in seed stage

4.1.3 Employment Growth

Figure 20 and Table 20 exhibit the ecosystem attributes and their weights in terms of employment growth. In the bootstrapping stage, Talent (weight = 0.156) is the most major ecosystem attribute, followed by Network Density (weight = 0.142) and Leadership (weight = 0.141). On the other side, Government (weight = 0.070) and Companies (weight = 0.077) are in the last positions.

In the seed stage, Talent (weight = 0.152) remains in the first place of importance noting a negligible drop. The next key attributes are Leadership (weight = 0.138) and Capital (weight = 0.134) since Network Density (weight = 0.122) declined sharply. At the other extreme, Companies (weight = 0.077) and Government (weight = 0.080) stay in the last positions.

In the creation stage, Talent (weight = 0.164) and Leadership (weight = 0.147) show considerable growth and are perceived by the experts as the most vital attributes for employment growth. Capital (weight = 0.132) remains almost steady while Government (weight = 0.069) hits the lowest point of importance.

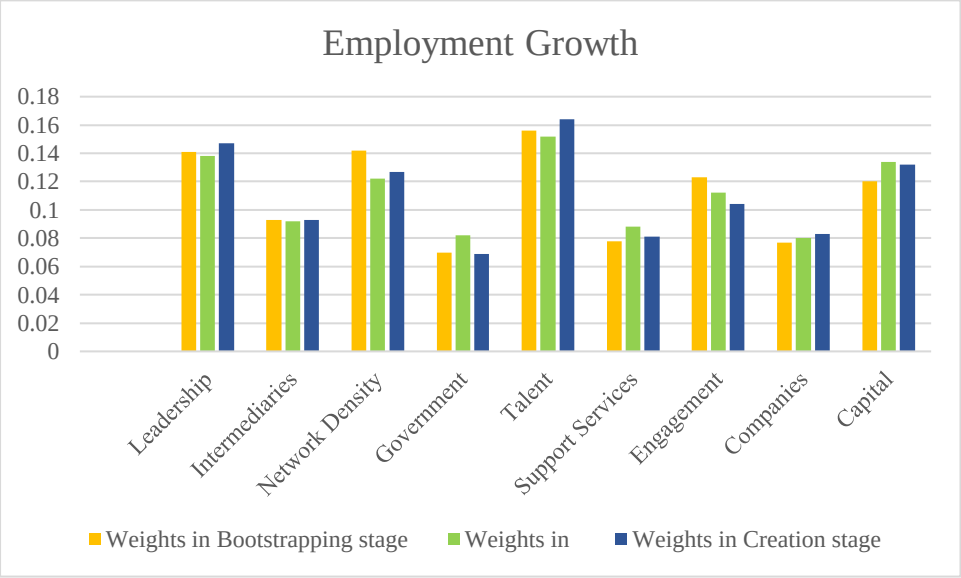

Figure 20. Weights of ecosystem attributes for employment growth

Table 20. Weights of nine entrepreneurial attributes of ecosystem for employment growth in Bootstrapping, Seed and Creation stage

Attributes	Weights in Bootstrapping stage	Weights in Seed stage	Weights in Creation stage
Leadership	0.141	0.138	0.147
Intermediaries	0.093	0.092	0.093
Network Density	0.142	0.122	0.127
Government	0.070	0.082	0.069
Talent	0.156	0.152	0.164
Support Services	0.078	0.088	0.081

Engagement	0.123	0.112	0.104
Companies	0.077	0.080	0.083
Capital	0.120	0.134	0.132

Figure 21 shows the credal ranking for the employment growth success measure in the creation stage. According to the respondents, Talent is at the top of importance in contrast to Support Services and Government at the bottom. More specifically, there is a confidence level of approximately 1 that Talent is more potent than seven ecosystem attributes. However, there is a confidence of 0.79 that Talent predominates Leadership, while the latter is more crucial than Engagement and Companies in absolute terms. Finally, there is the certainty that Capital is also more valuable than Support Services and Companies with a confidence level of 1.

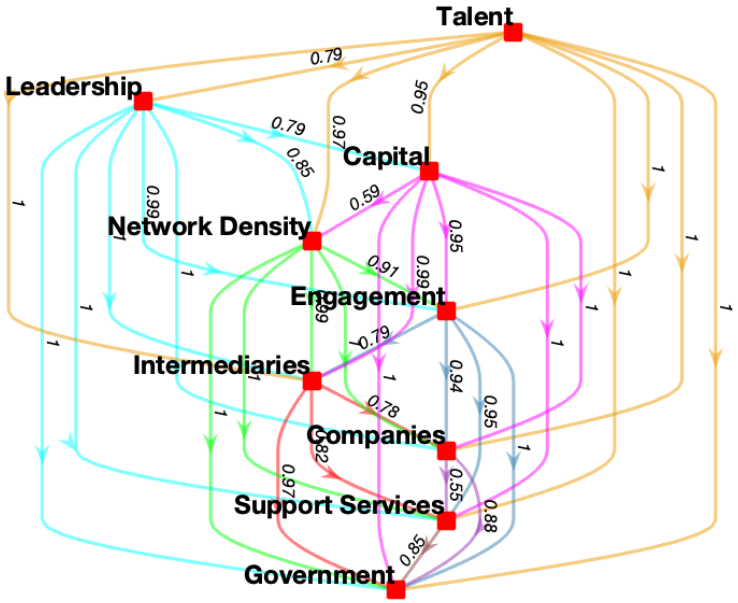

Figure 21. Credal ranking for employment growth in creation stage

4.1.4 Market Share

Figure 22 and Table 21 present which ecosystem attributes are more valuable in market share based on data obtained from structured online interviews. In the bootstrapping stage, Leadership (weight = 0.141), Capital (weight = 0.140) and Network Density (weight = 0.137) are in the first places of importance as opposed to Support Services (weight = 0.075) and Government (weight = 0.074) at the other end.

In the seed stage, Capital (weight = 0.153) increases significantly, followed by Leadership (weight = 0.136) and Network Density (weight = 0.132), which, although still essential, show a downward trend. Government (weight = 0.079) and Support Services (weight = 0.077) are still perceived as the most unimportant, thus showing better weights related to the previous stage.

Capital (0.158) stands out even more than the other attributes in the creation stage as the most crucial ecosystem attribute for market share. However, the importance of Talent (weight = 0.145) rises sharply compared to the previous stages, and Leadership (0.136) remains constant. Government (weight = 0.075) and Support Services (weight = 0.077) are the only ecosystems attributes that did not change position in the ranking of importance except showing a slight fluctuation.

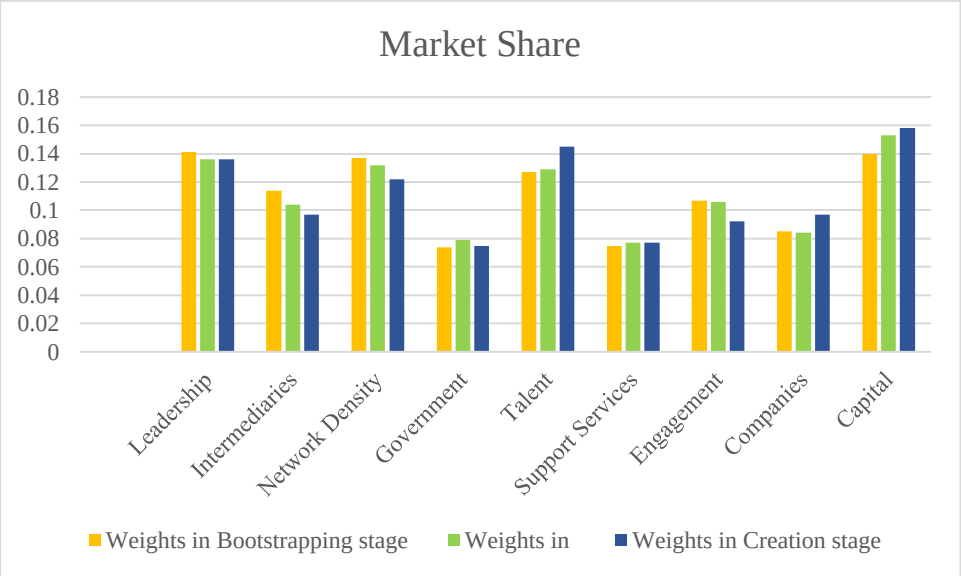

Figure 22. Weights of ecosystem attributes for market share

Table 21. Weights of nine entrepreneurial attributes of ecosystem for market share in Bootstrapping, Seed and Creation stage

Attributes	Weights in Bootstrapping stage	Weights in Seed stage	Weights in Creation stage
Leadership	0.141	0.136	0.136
Intermediaries	0.114	0.104	0.097
Network Density	0.137	0.132	0.122
Government	0.074	0.079	0.075

Talent	0.127	0.129	0.145
Support Services	0.075	0.077	0.077
Engagement	0.107	0.106	0.092
Companies	0.085	0.084	0.097
Capital	0.140	0.153	0.158

Figure 23 illustrates the credal ranking for the market share measure in the bootstrapping stage. The nods indicate that Leadership is perceived as the most important ecosystem attribute based on structured online interviews. Support Services and Government are the most insignificant for this success measure and stage at the other extreme. As it is observed, Leadership is the most potent ecosystem attribute compared to most of the attributes with a confidence level of 1. However, there is a level of 0.52 that Leadership overrides Capital. It's noteworthy that although Capital is more crucial than Companies and Support Services with a confidence level of 1, a confidence level of 0.56 shows its significance compared to Network Density.

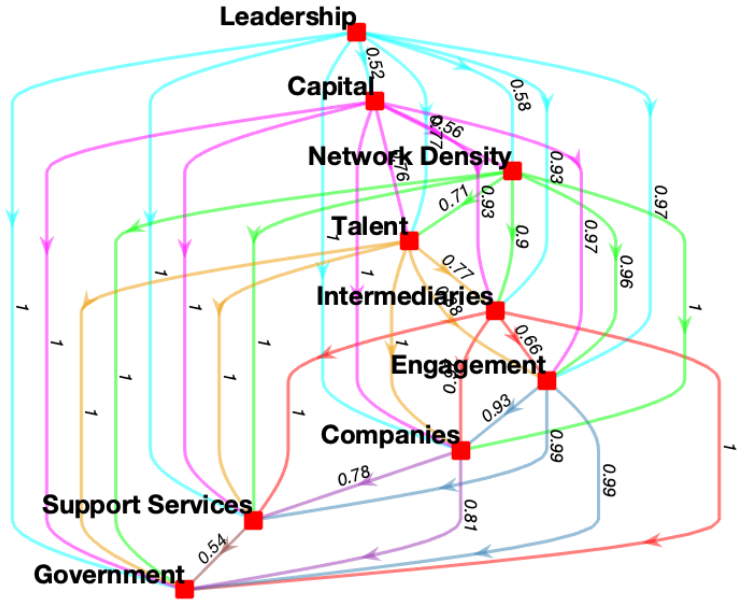

Figure 23. Credal ranking for market share in bootstrapping stage

4.1.5 Return on Investment (ROI)

Figure 24 and Table 22 provide information on the importance of ecosystem attributes in ROI. Leadership (weight = 0.159) is identified as the most critical ecosystem attribute in the bootstrapping stage. Talent (weight = 0.141) and Capital (weight = 0.131) are also recognized

for their significance in this stage. Government (weight = 0.076) and Support Services (weight = 0.076) seem to be the least major ecosystem attributes.

In the seed stage, the significance of Capital (weight = 0.149) increases dramatically, taking the top spot in the ranking. Further, Talent (weight = 0.148) is close to the top, showing an upward trend compared to the previous stage, while Leadership (weight = 0.143) is still essential but with a reduced weight associated with the bootstrapping stage. Looking down, Government (weight = 0.86) and Support Services (weight = 0.077) are the least valuable even if the former has made progress.

In the creation stage, Talent (weight = 0.163) presents an all-time high in importance, followed by the increased Capital (weight= 0.157) and the stable Leadership (weight = 0.140). Government (weight = 0.073) shows fluctuation in its weight while Support Services remains at the lowest ranking levels.

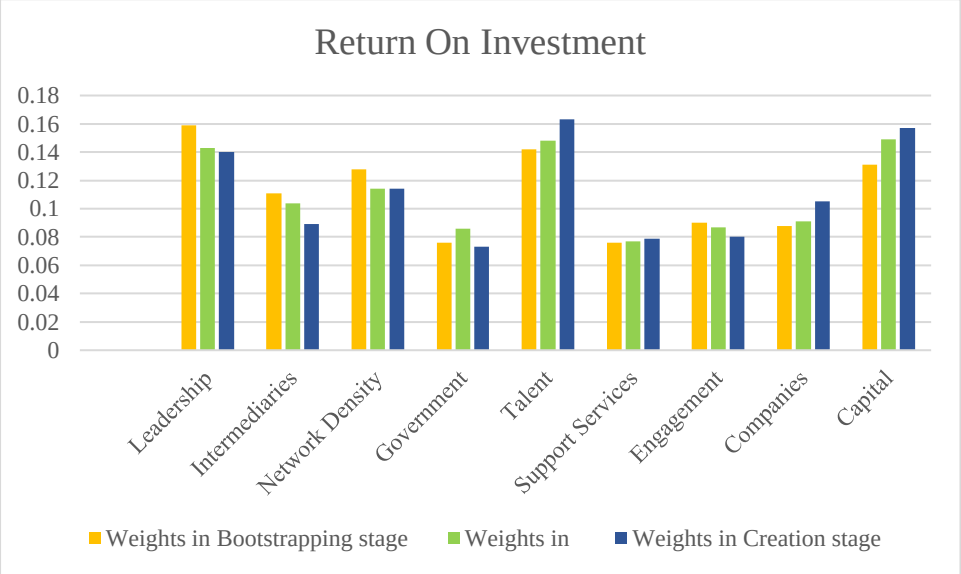

Figure 24. Weights of ecosystem attributes for Return on Investment

Table 22. Weights of nine entrepreneurial attributes of ecosystem for return on investment in Bootstrapping, Seed and Creation stage

Attributes	Weights in Bootstrapping stage	Weights in Seed stage	Weights in Creation stage
Leadership	0.159	0.143	0.140

Intermediaries	0.111	0.104	0.089
Network Density	0.128	0.114	0.114
Government	0.076	0.086	0.073
Talent	0.142	0.148	0.163
Support Services	0.076	0.077	0.079
Engagement	0.090	0.087	0.080
Companies	0.088	0.091	0.105
Capital	0.131	0.149	0.157

Figure 25Figure 19 presents a visualization of the credal ranking for the ROI success measure in the seed stage. According to the experts, Capital is first in the ranking of importance, followed by Talent, while Support Services are at the bottom of the ranking scheme. Moreover, it is observed that Capital and Talent are more critical than Government and Engagement with a confidence level of 1. However, a confidence level of 0.52 shows that Capital is more critical than the second in the ranking Talent. Further, the latter is undoubtedly more critical than Support Services, with a confidence level of 1.

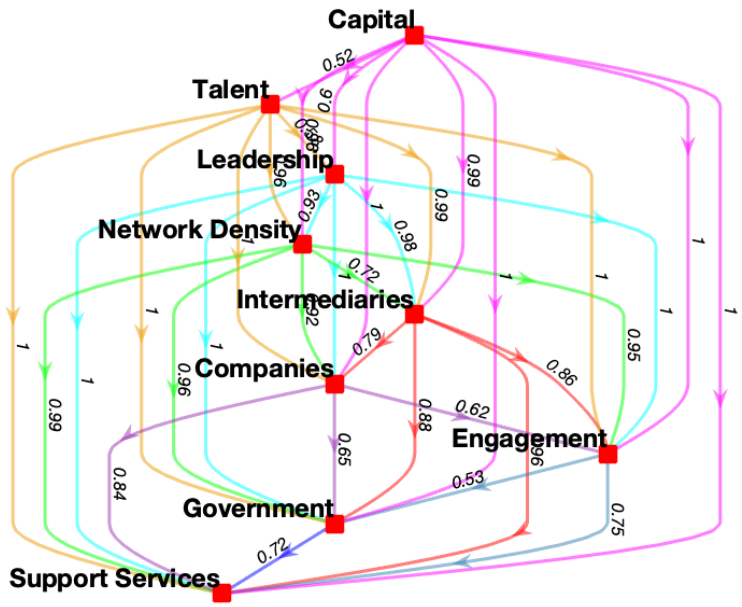

Figure 25. Credal ranking for ROI in seed stage

4.2 Importance-performance analysis

In this section, the performance and importance of the ecosystem attributes is provided for every stage life stage. For the importance, the geometric mean is estimated using the equation (1) below:

$$(1) \qquad \left(\prod_{i=1}^{n} \chi i = \right)^{\frac{1}{n}} = \sqrt[n]{\chi 1 \chi 2 \cdots \chi n}$$

and is defined as the nth root of the product of n numbers, i.e., for a set of numbers $\chi 1 \chi 2 \cdots \chi n$. In this research, χ represents the numerical value of one ecosystem attribute.

Taking the example of Leadership in the bootstrapping stage, equation (1) is further analysed:

$$= \sqrt[5]{0.150 * 0.142 * 0.141 * 0.141 * 0.159 = 0.15}$$

As shown in Figure 26, the ecosystem attributes that experts perceive as vital for the Dutch entrepreneurship ecosystem in the bootstrapping stage also show a high-performance level. This is relevant to attributes like Talent, Leadership, Network Density and Capital. Other ecosystem attributes like Intermediaries and Engagement perform highly even with a low priority regarding their significance. Finally, attributes like Companies combine low performance and importance in contrast to the rest of the ecosystem attributes. Table 23 presents the values for each of the ecosystem attributes regarding the two previously mentioned dimensions.

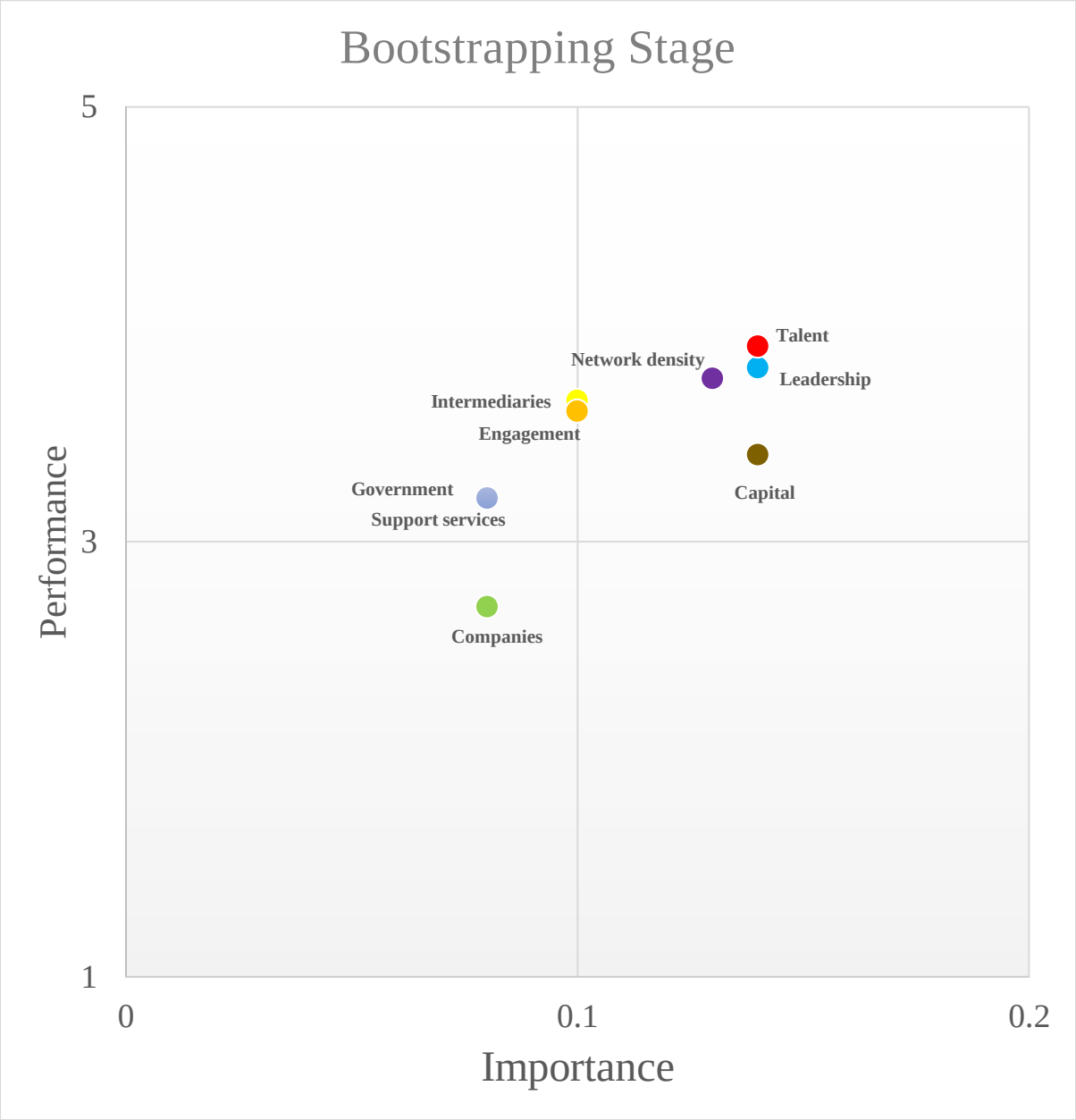

Figure 26. Importance-performance chart for bootstrapping stage

Table 23. Performance and Importance of ecosystem attributes in bootstrapping stage

Entrepreneurial attributes of ecosystem	Performance	Importance
Leadership	3.90	0.15
Intermediaries	3.85	0.11
Network density	3.60	0.14
Government	2.75	0.08

Talent	3.80	0.14
Support services	3.15	0.12
Engagement	3.60	0.10
Companies	2.55	0.08
Capital	3.30	0.12

As Figure 27 illustrates, according to the respondents, the ecosystem attributes that are critical in the seed stage show a high-performance level. Similar to the bootstrapping stage, these attributes are Talent, Leadership, Network Density and Capital. Furthermore, attributes with low importance and poor performance are Government and Support Services. Although the differences between the two stages are not easy to determine due to their equal importance and performance, Table 24 presents the numerical values of the ecosystem attributes for the seed stage.

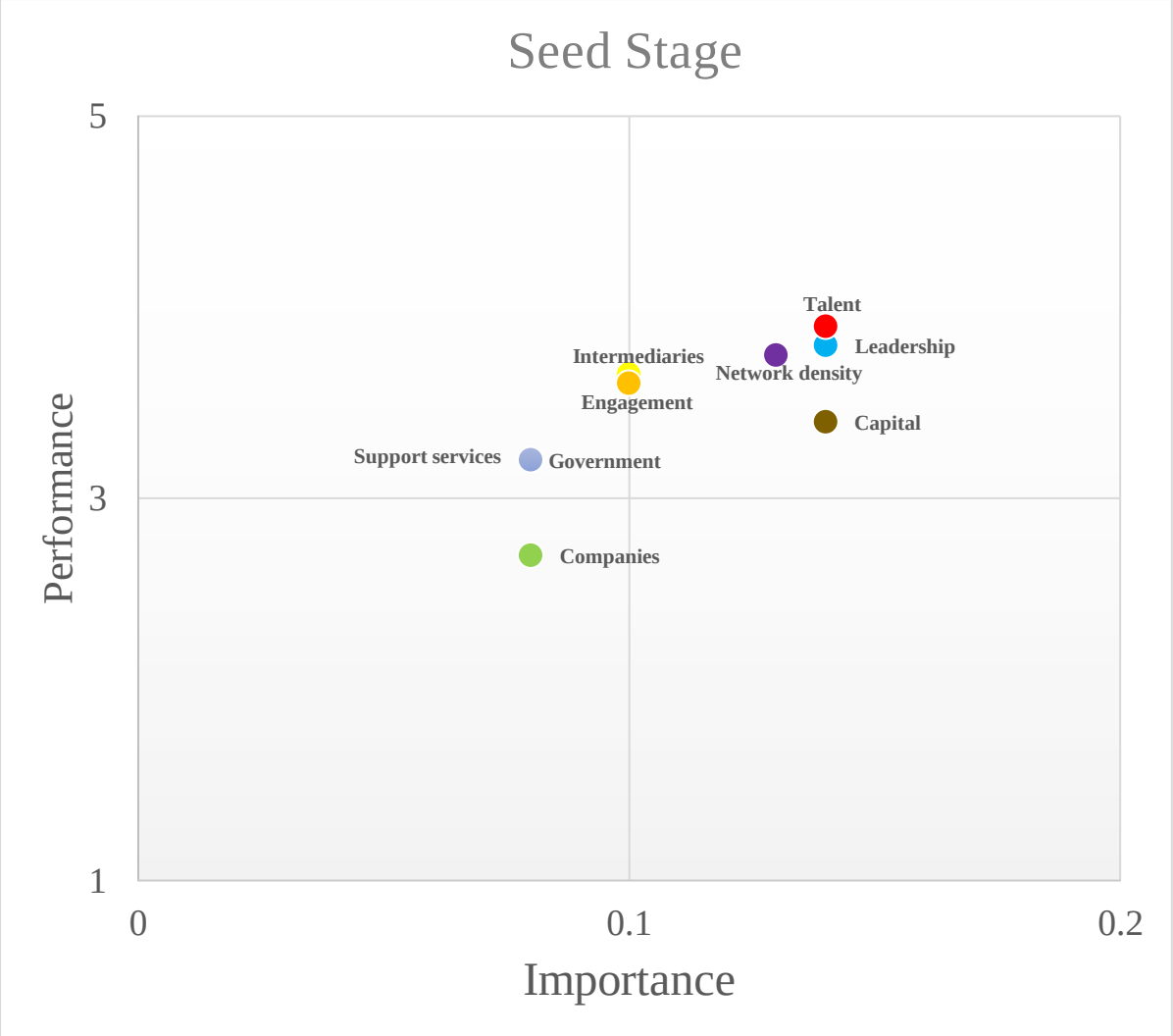

Figure 27. Importance-performance chart for seed stage

Table 24. Performance and Importance of ecosystem attributes in seed stage

Entrepreneurial attributes of ecosystem	Performance	Importance
Leadership	3.80	0.14
Intermediaries	3.65	0.10
Network density	3.75	0.13
Government	3.20	0.08
Talent	3.90	0.14
Support services	3.20	0.08
Engagement	3.60	0.10
Companies	2.70	0.08
Capital	3.40	0.14

Figure 28 presents the importance and performance of the ecosystem attributes in the creation stage. In the opinion of experts, essential ecosystem attributes such as Talent, Leadership, Capital, and Network Density also have a high performance. In addition, Intermediaries and Engagement perform in lower levels than the previous stages while their importance is also common. Finally, the ecosystem attribute of Companies seems to be more significant than in earlier stages while maintaining a low level of performance. Table 25Table 24 exhibits the numerical values of the ecosystem attributes in the creation stage.

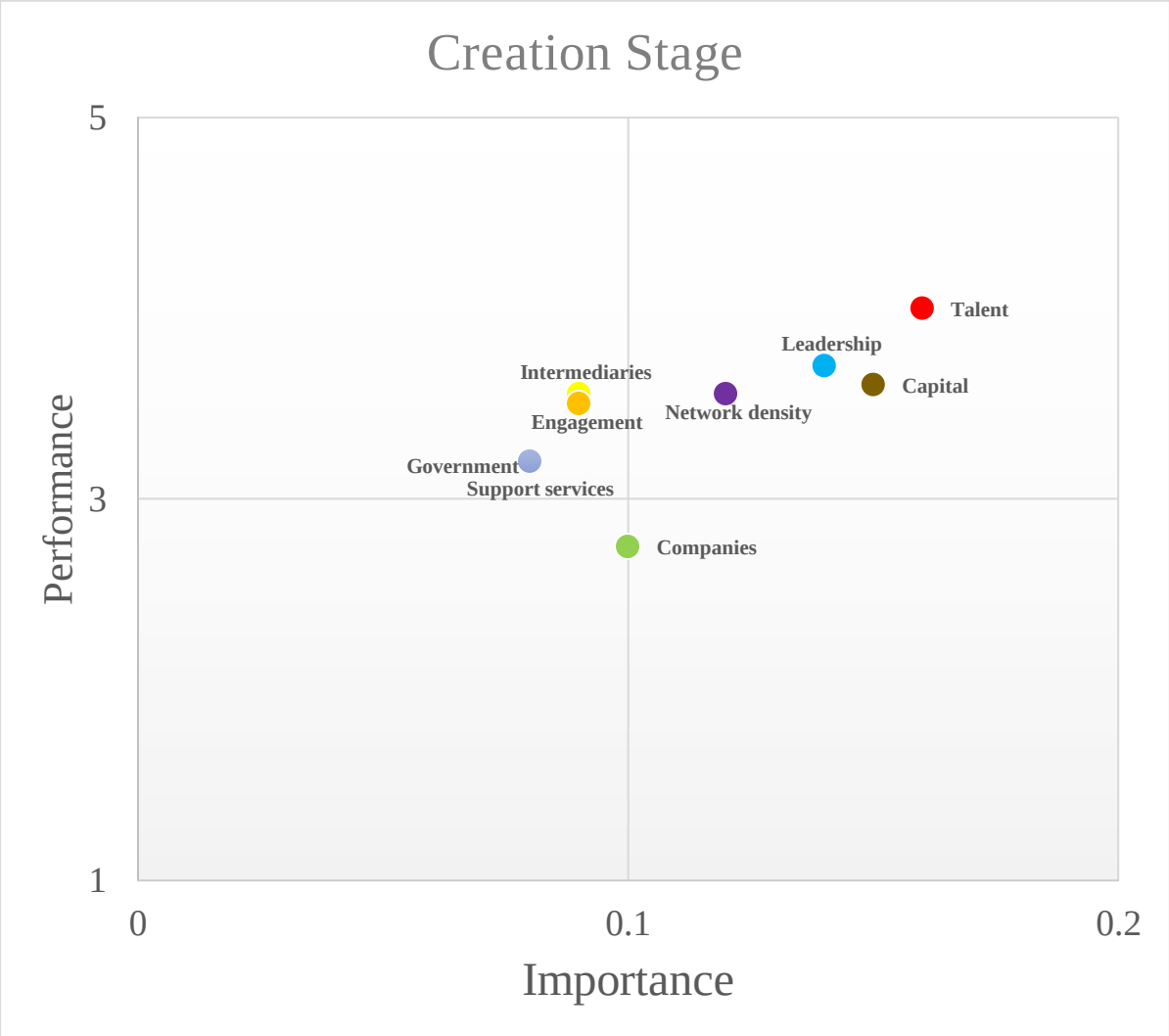

Figure 28. Importance-performance chart for creation stage

Table 25. Performance and Importance of ecosystem attributes in creation stage

Entrepreneurial attributes of ecosystem	Performance	Importance
Leadership	3.70	0.14
Intermediaries	3.55	0.09

Network density	3.55	0.12
Government	3.20	0.08
Talent	4.00	0.16
Support services	3.20	0.08
Engagement	3.50	0.09
Companies	2.75	0.10
Capital	3.60	0.15

5 Discussion

This research paper is conducted to explore "how does the entrepreneurship ecosystem contribute to the performance of entrepreneurial start-up firms." As the previous literature only mentions the most important entrepreneurship ecosystem attributes for start-ups, this research focuses on three stages of the start-up's lifecycle: 1) the bootstrapping stage, 2) the seed stage, and 3) the creation stage. To better understand the research question, this study is further analysed into five sub-research questions related to three main focal points: attributes of the entrepreneurship ecosystem, success, and start-ups.

The discussion will follow a similar structure as in the results chapter for better clarification. More specifically, it will be divided based on the success measures of start-ups. The Bayesian Best-Worst Method (BBWM) results will be juxtaposed to the earlier literature review. This study will provide recommendations to start-ups on how to improve their performance and achieve success. In addition, it will suggest to the government, decision-makers, advisors, and investors how to support the start-ups to help them be more successful. It is valuable to note the contribution of this study to the food sector and the focus for future research.

5.1 The importance of ecosystem attributes regarding Profitability in every life stage

Based on the weights of the ecosystem attributes through the structured online interviews, the analysis identifies Network Density as the most crucial ecosystem attribute for profitability in the bootstrapping stage. In the light of previous research, Brown et al. (2014) noted the importance of a strong Network Density in the early stage of a start-up's life. A possible explanation is that start-ups seek early investors to contribute to their business ideas, targeting profit. Furthermore, Carayannis et al. (2016) asserted that with the creation of a strong Network

Density, new start-ups obtain knowledge and gain a competitive advantage. This point of view is understandable considering that having a solid Network can be optimal for the approach of early investors that will assist in higher profit rates. Leadership is recognized as the following best ecosystem attribute, followed by Talent. In this stage, strong entrepreneurs must contact very early investors, even if these are related to friends and family. The ability to present the vision and the potential of the start-up might pique the interest of future partners. Moreover, leaders must not misunderstand and focus appropriately on ways to make a profit (Meehan et al., 2011). This can only be achieved by applying their talent skills and seizing the existing opportunities. Further, the data suggest that Companies and Support Services are perceived as the least essential ecosystem attributes. It could be that more prominent Companies prioritize their needs without considering the benefits of possible cooperation with entrepreneurial start-ups. At the same time, Support Services do not impact profit. This result contradicts the findings of Salimi (2021), who found that more prominent Companies could be efficient for start-ups compared to Support Services. This outcome might be different since this research focuses on every stage of the start-ups' life cycle compared to previous studies.

Network Density remains the most valuable ecosystem attribute for profitability in the seed stage. A possible explanation for the importance of Network Density is that interaction with possible co-operators might be an opportunity for entrepreneurs to promote their products or services and thus to make a profit. Next, Capital is also vital for start-ups that want to increase their profit rates. More precisely, start-ups exchange ideas with future investors and mentors from their Network to raise Capital. However, this requires the presence of solid entrepreneurs who can persuade investors about their business plans. For this reason, Leadership is similarly perceived as an essential ecosystem attribute. Stam (2015) claimed that leaders are central players who provide direction to maintain a thriving entrepreneurship ecosystem. In dense networks, exchanging ideas and opinions can yield financial transactions (Auerswald, 2015). At the bottom, nothing changed compared to the bootstrapping stage, as Companies and Support Services remain the least important ecosystem attributes for the previously described reasons.

Respondents perceive Talent as the most critical ecosystem attribute in the creation stage. A possible explanation for the outcome is the fact that experts evaluate the ability of entrepreneurs to lead and have the Talent to attract large investors. Since venture capital firms are possible investors in this stage, a talented leader should convince about the potential evolution of the

start-up. Feld (2012) correlated highly skilled and qualified entrepreneurs with effective decision-making. Leadership and Capital are the following most crucial ecosystem attributes in this stage. The data support the findings of Salimi (2021) who noted the importance of Talent, Capital, Network density, and Leadership regarding profitability. Finally, as for the ecosystem attributes that matter least to profitability, Support Services stay unimportant while Government is the lowest in importance rankings. A possible reason that experts perceive Government so unimportant might be due to its inaction on any support to start-ups.

5.2 The importance of ecosystem attributes regarding Sales Growth in every life stage

The results of this research provide supporting evidence that Network Density is the most dominant ecosystem attribute in terms of sales growth in the bootstrapping stage. One interpretation of these findings is that entrepreneurs promote their products or services on their network targeting future customers. In the early stage, a dense network has been found constructive for start-ups since entrepreneurs access essential information of new opportunities (Sullivan and Ford, 2013). Leadership is perceived as the second-best ecosystem attribute, followed by Talent. This pattern of results is consistent with the previous literature (Brüderl and Preisendörfer, 1998; Salimi, 2021; Sullivan and Ford, 2013). Cooperation with high skilled advisors, investors, mentors, and partners is a significant benefit for dealing with issues. Brüderl and Preisendörfer (1998) claimed that networks contribute to performance only when the entrepreneur can use them properly. This study supports this idea since Talent is also a crucial ecosystem attribute. In addition, it is necessary to build a dense network and develop strong ties with the people belonging to this. Finally, the results seem consistent with other research, which found Talent and Network Density are essential for sales growth (Salimi, 2021). In this stage, the Government is perceived as the least preferable ecosystem attribute. It could be that Government's policies do not influence the sales rates. This outcome is supported by Oktaviyani et al. (2017) who argued that there is no correlation between sales growth and tax avoidance. Even if the study concerns another field and country, it continues to be encouraging for the research.

In the seed stage, Capital is the most critical ecosystem attribute for sales growth. A strong relationship between Capital and sales growth has been reported in the literature. According to Paglia and Harjoto (2014), less access to Capital can lead to start-ups' failure. Moreover, it is encouraging to compare this outcome with that found by Salimi (2021), who supported that

Capital is crucial for sales growth. However, this contradicts the study of Mason and Brown (2014), where Capital is temporary and does not contribute to the success of start-ups in the long run. This somewhat contradictory result may be because success is a general term and can be measured differently. A possible explanation for the increasing importance of Capital is the necessity to scale up quickly and gain credibility. Thus, likely new investors are interested in the potential of the start-up. Talent is also a crucial ecosystem attribute followed by Leadership. In previous studies, researchers have correlated the impact of Leadership on the performance of a sales employee (Jaramillo et al., 2013). In addition, there is interest in how a leader can motivate employees to improve their performance to achieve sales growth (Ingram et al., 2005). Finally, Support Services and the Government remain at the bottom positions. Following the present results, previous studies have demonstrated that both ecosystem attributes do not impact sales growth (Salimi, 2021).

Capital is the most significant ecosystem attribute for sales growth in the creation stage. This result is possibly related to the fact that in this stage, start-ups are evaluated by venture capital firms. They need Capital for better equipment, advertisements, and a skilled workforce to increase sales. This belief is consistent with the results since Talent is also a vital ecosystem attribute, followed by Leadership. Previous studies have demonstrated that the existence of Talent is linked to higher levels of sales (Guthridge et al., 2008; Mayer-Haug et al., 2013). There are several possible explanations for the results regarding this success measure. Firstly, entrepreneurs should expand their network to seize opportunities. To overcome the first obstacles, they need to be solid leaders and use their Talent. This requirement is not only enough since they can develop a competitive advantage with the provision of Capital. This Capital is possible provided by investors, which is why the experts rate the importance of the government low. On the other side, Engagement and Government are the least essential ecosystem attributes for sales growth. As the start-up moves into the following stages, the meetups are less critical. One possible explanation is that, by attending meetings, entrepreneurs share ideas on how to develop their start-ups and are only concerned in the bootstrapping stage. In the creation stage, start-ups might have already created their network and thus paid more attention to other ecosystem attributes.

5.3 The importance of ecosystem attributes regarding Employment Growth in every life stage

There are three key findings of the present success measure in the bootstrapping stage. First, Talent is the most major ecosystem attribute. The risk of this stage requires employees with Talent in every start-up position. Even if the company consists of very few people, their ability to hire high-skill employees can lead to success. This result represents the first direct demonstration of Salimi (2021) about the importance of Talent regarding employment growth. Second, Network Density and Leadership are important ecosystem attributes for employment growth. The most compelling explanation for Leadership is that strong entrepreneurs seek competent employees who can, through their performance, develop the start-up. At the very early stage of the start-up, a way of finding qualified employees may be through a deep and dense network. This point of view also fits with observations from earlier studies. Guerrero and Axtell (2013) claimed that employment growth could be observed in deep and well-connected communities. Furthermore, this is in line with the findings of Kaufmann and Wittwer (2019) that showed an association of dense networks with employment growth. Third, Government is the least significant ecosystem attribute based on the decision-makers, which is supported by the findings of Salimi (2021).

Talent remains the most important ecosystem attribute for employment growth in the seed stage. A possible explanation is that the characteristics of this stage are the teamwork that will evolve the start-up, which requires the cooperation of talented employees. Similarly, Leadership is also an essential ecosystem attribute because strong entrepreneurs guide the success of start-ups. The present results are consistent with Pede et al.'s (2021) work that found a positive correlation between technical Leadership and employment growth. In addition, Baizid (2016) reported that different leadership styles affect employment growth differently, highlighting the influence of Leadership. The data suggest that Capital influences the number of employees in a start-up. One interpretation of this finding is that early investors can contribute and offer the opportunity to recruit competent employees. These results reflect those of Paglia and Harjoto (2014), who also found that Capital is crucial for the strategy of start-ups and the employment growth rates. The inability to raise Capital can lead to fewer employees and business failure. Companies are perceived as the minor essential ecosystem attribute at the other extreme. This finding may be explained by the idea that start-ups do not rely on large Companies due to the competition, so this relationship remains inactive.

Talent is still considered the most vital ecosystem attribute in the creation stage, with Leadership in the second place. It is noteworthy that Talent remained in the first place across all stages of start-ups life for the same reasons explained earlier. This result is also in accord with recent studies indicating that increased human capital (e.g., Talent, intelligence, skills, etc.) correlates with increased employment (Simon, 1998). Mayer-Haug et al. (2013) argued the importance of an entrepreneur being talented to attract more employees from the previous success measure. Another significant ecosystem attribute is Capital. Consistent with the literature, Yoon (2018) argued that Network Density is primary in the first stage, but human Capital becomes more critical later on. In this stage, Capital is provided by venture capital firms that evaluate the potential of the start-up. On the other hand, Government hits the lowest point of importance. There are many reasons why the Government's low level of significance. It could be that start-ups do not consider government support important for this type of success, which is confirmed by Salimi's (2021) findings. Finally, Iheanacho (2016) asserted that the successful management of the Government's Capital in the agriculture sector would benefit the employment rates.

5.4 The importance of ecosystem attributes regarding Market Share in every life stage

In the bootstrapping stage, the data suggest that Leadership is the most vital ecosystem attribute. It may be the case that experts admit that strong entrepreneurs can improve profitability, sales rates and finally gain market share in the earliest stage of start-ups' life. Previous studies can also confirm this. According to Rooke and Torbert (2009), leaders who can expand the market share and increase profit rates are necessary for every business. Moreover, Coeurderoy and Durand (2004) underlined the influence of cost leadership strategy on increasing market share. Among the first positions of importance are Capital and Network Density. A possible explanation is that solid entrepreneurs must visualize the business plan to early investors, targeting Capital spent for a better market share. This point of view is in line with Travis (2013), who claimed that the proper Network Density could result in a larger market share. Finally, a critical factor in developing a start-up is access to Capital, leading to a better market share. On the other hand, Government is the least significant ecosystem attribute. It could be that experts undervalue the support from the Government based on previous experience or from their discussions with mentors. This finding was also reported by Kozan et

al. (2006). More specifically, the negligible support of the Government could be an obstacle for businesses that want to expand their market share.

Capital is perceived as the most significant ecosystem attribute in the seed stage. The same result was observed in the success measure of sales growth. It is not surprising since market share is linked to sales growth. More precisely, when a company increases its sales rates, the chances of a better market position increase significantly (Brush et al., 2000). Further, the average investment that characterizes this stage explains Capitals' value. Close to the top are Leadership and Network Density. These two ecosystem attributes continue to remain at the forefront of importance. This result can be explained by the fact that the entrepreneurs should contact early investors and incubators, targeting a higher market share. Martin (2015) argued that leaders who take advantage of their potential in deep communities could gain a competitive advantage in combination with market share. Entrepreneurs can also achieve this target by applying a more aggressive marketing strategy profile (Pleshko and Heiens, 2012). Support Services are recognized as the least essential ecosystem attribute at the other extreme. This result agrees with those obtained by Salimi (2021).

It is likely urgent to approach Capital investors as described in other success measures in this stage. The results support that Capital remains the most crucial ecosystem attribute for market share in the creation stage. The observed increase in the weight of Capital could be attributed to the high investment that it might be provided by venture capital firms based on the potential of the start-up. It is noteworthy that Talent becomes the second most vital ecosystem attribute in this stage, followed by Leadership. A conceivable reason for the importance of Talent and the downward trend of Network Density has also been observed in other success measures. It appears that in the later stages, the high skills of employees are crucial for a higher market share, while the connections are still essential but not as they were in the previous stages. Except for Leadership, Martin (2015) highlighted Talent development as one of the most important ways to maintain the market share. This perspective supports previous research into this brain area which links Talent and market share (Scott, 2012). At the bottom is Government, with little difference from the penultimate Support Services ecosystem attribute. At the bottom continue to be the ecosystem attributes of Government and Support Services for the reasons mentioned above.

5.5 The importance of ecosystem attributes regarding Return on Investment (ROI) in every life stage

In the bootstrapping stage, the results show that Leadership is the most critical ecosystem attribute. One interpretation of these findings is that the entrepreneurs must be committed to starting and growing a start-up. In general, the return on investment is not feasible in the very early stage of a start-up's life. Still, the ecosystem attributes that contribute to this future goal are hypothetically highlighted. These results are consistent with Archer's (2013), who claimed that enriched leadership skills could increase sales trends and thus increase the ROI. Second in the importance ranking is Talent, followed by Capital. It is not a surprising result since most start-ups have difficulty moving to the next stage of their lives due to a lack of Talent and Capital. In her study, Rangapura (2008) correlated high skills and Talent with ROI, while angel investors are the most likely fund providers at this stage. Government and Support Services share the last place of importance for this measure of success. As Kozan et al. (2006) stated, "for financing and investment, small businesses had to overwhelmingly rely on family resources rather than loans from the government or private institutions."

Capital is identified as the most vital ecosystem attribute for ROI in the seed stage. As mentioned in the literature review, many start-ups fail in this stage due to high uncertainty (Salamzadeh, 2015). Not having access to Capital could lead to the failure of the business. Moreover, it has been observed that in most success measures, Capital becomes the most essential ecosystem attribute for start-ups at this stage. Close by are the ecosystem attributes of Talent and Leadership. The evolution of the start-up requires the cooperation of talented employees. Saadat and Eskandari (2016) argued that the highest ROI is expected by businesses that invest in qualified employees and strategically create a competitive advantage. It is interesting to note that these two ecosystem attributes are usually very close to the significance level. Based on the respondents, Support Services are perceived as unimportant for this stage. ROI is also used to evaluate the profitability of one business, and thus these two success measures are linked with each other (Zamfir et al., 2016). This finding is consistent with Salimi (2021), who found that support from different services does not influence profitability and thus the ROI.

Talent is recognized as the most valuable ecosystem attribute in the creation stage, followed by Capital and Leadership. The literature has proved that more considerable Capital scales up

quickly and sustains a competitive advantage in other success measures. Thus, talented, and robust entrepreneurs are undoubtedly needed. The data suggest that combining these three ecosystem attributes is usually at the top of the start-ups' importance regardless of success measurement. According to the respondents, Government is the least essential ecosystem attribute. As previously referred, start-ups are turning their attention to other types of financial support such as venture capital, and perhaps this could explain the above result. This logic exists because of the lack of government support (Kozan et al., 2006).

5.6 Importance-performance analysis

As mentioned in Section 3.5 Data analysis methods, the Importance-performance analysis is a valuable tool for policy makers and experts in the Dutch agri-food sector to identify essential ecosystem attributes that currently have poor performance (High Importance-Low performance). Moreover, this tool also provides information about overemphasised attributes that are not a vital part of success, indicating that further focus should be avoided.

In all three stages (bootstrapping, seed, and creation stage), the ecosystem attributes that are crucial to the success of start-ups in the Dutch agri-food sector also have a high level of performance from the perspective of experts (Figure 26, Figure 27, Figure 28). The attributes Talent, Leadership, Network Density, and Capital belong to this list and are positioned in Quadrant B. This area has already received enough attention, and the entrepreneurship ecosystem in this industry does not need to be improved from the vantage point of experts. Therefore, experts should avoid investing resources as there are no opportunities to exploit them.

Although attributes in Quadrant A such as Government and Support Services are considered less important, their current level of performance is more than satisfactory. This result indicates that more emphasis has been placed on attributes that should not be prioritised in all three stages. Focusing on this area should be avoided, and instead, experts should invest in higher priority areas.

It is interesting to note that in the bootstrapping and seed stage, the ecosystem attribute Companies is located in Quadrant C. There are no opportunities to exploit, and further resource investment should be avoided since its importance and performance level is low. However, in

the creation stage, the attribute Companies has medium significance for the success of start-ups. At the same time, its performance is still low, and so is in between Quadrant C and D. Therefore, it could be considered as an opportunity for experts to invest in programs related to cooperation with large Companies.

As it concerns the ecosystem attributes Intermediaries and Engagement, in the bootstrapping and seed stage are in between Quadrant A and B and have already been emphasised and performed at a pretty high level. In contrast, their importance is even lower in the creation stage, and experts should avoid focusing on this area. Finally, the absence of the ecosystem attributes from Quadrant D indicates no specific area in which the experts should focus because the entrepreneurship ecosystem performs well in every life stage of start-ups.

6 Conclusions, Limitations & Recommendations

This research aimed to investigate the importance of various entrepreneurship ecosystem attributes for start-ups' success in the Dutch agri-food sector. Since there is a research gap that concerns the importance levels of these ecosystem attributes for of start-ups in every stage of their lifecycle, the author identified and focused separately on three stages (bootstrapping, seed, and creation). In this study, nine entrepreneurship ecosystem attributes (Leadership, Intermediaries, Network Density, Government, Talent, Support Services, Engagement, Companies, and Capital) were selected from Feld's (2012) proposed model. Since the research problem includes many areas to be analysed, the author chose an innovative MCDM analysis method called Bayesian Best-Worst Method by Mohammadi & Rezaei (2020). Furthermore, using the Importance-performance analysis method of Martilla & James (1977), the author proposed a framework that experts (managers, founders, entrepreneurs, and directors) should consider to succeed in each of these stages. In the literature, success can be measured in different ways (profitability, sales growth, employment growth, market share, and return on investment).

Through this research, experts and other actors in the entrepreneurship ecosystem can understand how it affects the performance and success of start-ups. First, entrepreneurs can use the outcome of this study to improve their start-ups by identifying their current life stage and the areas they should focus on more. Furthermore, the experts can use the same methodology to assess the circumstances that might be essential for the success of start-ups. More

specifically, when there are possible situations that might be challenging, the experts are responsible for discerning what will benefit the start-up. Following the same methodology, the entrepreneurs are likely to save money while managers and directors optimise their time and work. However, there are also implications for other actors such as policy makers, investors, incubators, and advisors on the areas that start-ups need support, always depending on their life stage. Academically, the study fills the gap by identifying valuable attributes for each start-up's life stage and confirming relevant previous theories and reflections.

The results indicate that Leadership, Network Density, Talent and Capital are vital for each one of the start-ups' life stages. Based on experts' perception, the performance level of the most critical ecosystem attributes is high. Thus, it demonstrates that the Dutch agri-food entrepreneurship ecosystem operates efficiently and supports the development and success of start-ups. Moreover, even if Government and Support Services have less importance for the success of start-ups, their performance level is more than satisfactory. It is also interesting to note some differences between the creation and other stages regarding the ecosystem attributes of Talent and Companies. As the start-ups evolve, the need for Talent in all sectors and areas of expertise becomes even more remarkable, while establishing specific departments and programs for cooperation between larger companies and start-ups is becoming more critical.

Solid academic research requires more than just selecting a topic, collecting, and analysing data. This research has strengths related to specific criteria. First, the proper formulation of the research and sub research questions ensured that the author remained on track throughout the research period. Second, the study's quality and success dramatically depend on the research methodology. The author used a quantitative analysis because statistical techniques are objective, replicable and facilitate sophisticated data analysis in complex MCDM problems. Furthermore, a strong point of this research is its reliability and validity. An e-mail with the description of all the key words was sent to the respondents before conducting interviews in conjunction with the structure. It is significant to note that the author answered and explained respondents' questions to reduce bias. Third, the author acknowledged previous research on the topic without duplicating the existing work of others. Fourth, using the same analysis methods (Bayesian Best-Worst Method & Importance-performance analysis) to prior studies allows the author to compare the findings and identify any weak points. Fifth, compared to previous studies, a broader perspective of respondents such as managers, founders, entrepreneurs, and directors was taken into account.

However, every research has weak points and limitations, and identifying them is essential for future research. First, the Covid-19 pandemic was a communication barrier, as the interviews were conducted online, and the lack of a good internet connection made the interviewing process more difficult. Second, the research sample size was relatively small due to the limited time available for data collection. Academic researchers have approximately six months, and the time may not be sufficient for more interviews. Third, only the entrepreneurship perspective is presented. Fourth, using the same sample for both analysis methods (BBWM & Importance-performance analysis) could be a source of bias. Another constraint concerns the suitability of ecosystem attributes, success measures, and life stages of start-ups. In this case, the selection of crucial ecosystem attributes may not be sufficient, as other studies suggest different ecosystem attributes. The empirical results reported in Chapter 4 should be considered in light of some limitations related to the experts' interviews. In particular, poor past experiences could affect the willingness of respondents to share their honest thoughts on the topic.

These limitations provide the following insights for future research: Collecting data through face-to-face interviews is likely to provide more valid results. In addition, possible researchers should aim to increase the sample size for the best representation of experts in the Dutch agri-food entrepreneurship ecosystem. At the same time, the participation of key stakeholders like banks and government would be ideal for examining their perspectives as well. More extended periods of collected data can benefit future research, although they hide obstacles regarding validity and reliability. Further, it is suggested that there should be a balance in the number of respondents based on their gender. Finally, future researchers can compare the Dutch entrepreneurship ecosystem with the one of a different country in the agri-food sector and present the differences.

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Appendix

Interview guide for a structured interview with entrepreneurs of start-ups in the food sector in the Netherlands

The goal of the interview: to learn what entrepreneurs believe about the attributes of the entrepreneurship ecosystem regarding the success measures of start-ups in each stage of the start-ups' lice cycle.

Recording: the researcher will ask permission for the recording of the interview, while all the sensitive information will stay anonymous.

Introductory Questions

1. What is the name of the company you are working and what is your current role?
2. How are you linked to the topic of Dutch agri-food sector?
3. What is your current age?
4. What is your gender?
5. What is your current highest completed education level?

Central Questions

1. Do you have any questions regarding the key concepts of this interview?
2. Do you have any other questions before we start the interview?
3. There are five different measures of success and the three stages of the start-ups' lifecycle (Table 26, Table 27, Table 28).

- Using the attributes of the entrepreneurship ecosystem, choose the best (B) and the worst (W) for each occasion.
- Compare the best attribute with the remaining ecosystem attributes, using a scale from 1 to 9 (where 1 is 'equally important' and 9 is 'extremely more important').
- Compare the worst attribute with the remaining ecosystem attributes, using a scale from 1 to 9 (where 1 is 'equally important' and 9 is 'extremely more important').

Table 26. Bootstrapping stage and success measures

Stage	Success Measure
Bootstrapping	Profitability
	Sales Growth
	Employment Growth
	Market Share
	Return on Investment

Table 27. Seed stage and success measures

Stage	Success Measure
Seed	Profitability
	Sales Growth
	Employment Growth
	Market Share
	Return on Investment

Table 28. Creation stage and success measures

Stage	Success Measure
Creation	Profitability
	Sales Growth
	Employment Growth
	Market Share
	Return on Investment

4. To evaluate the performance of the Dutch entrepreneurship ecosystem in the agri-food sector in every stage of the start-up's lifecycle, could you please rate the ecosystem attributes using a scale from 1 (very low) to 5 (very high) regarding their performance?

Conclusion Question

1. Would you like to receive the results of the research via e-mail?
2. Do you believe that the key concepts suit the research topic?

Credal Ranking

Additional figures regarding the credal ranking can be found in this part of the appendix. The figures are distinguished based on the measure of success.

Profitability

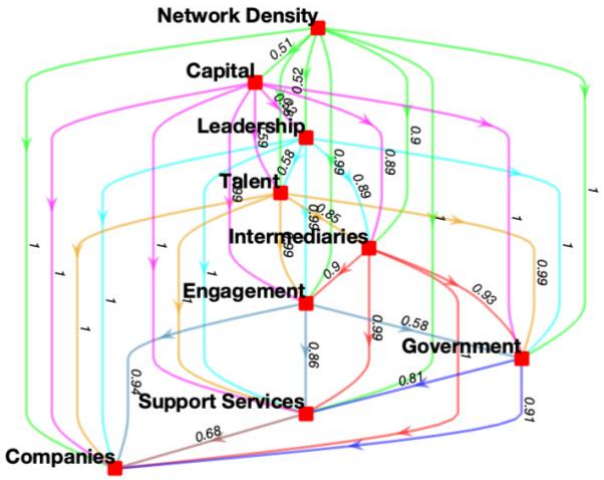

Figure 29. Credal ranking for profitability in seed stage

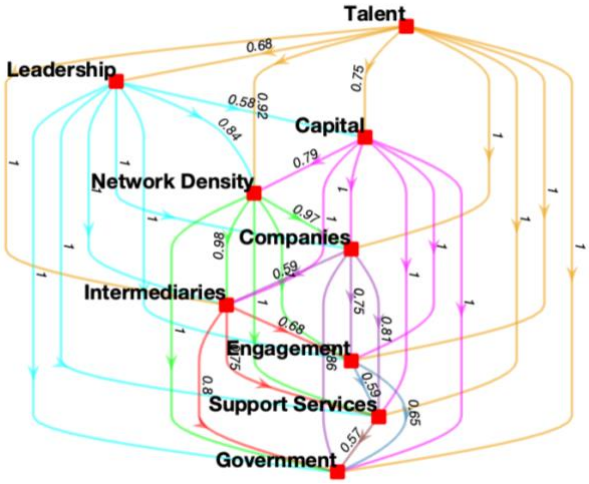

Figure 30. Credal ranking for profitability in creation stage

Sales Growth

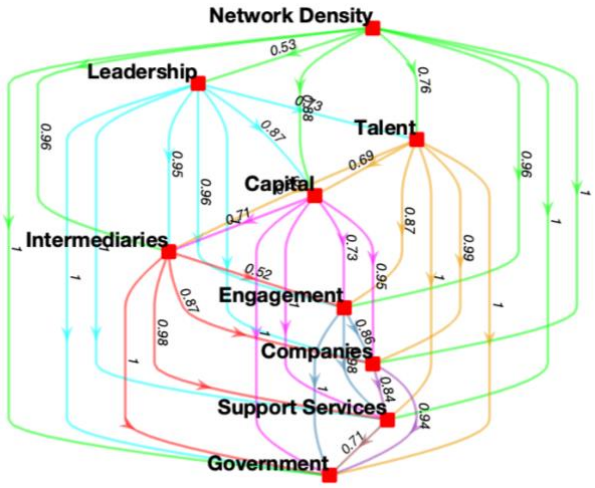

Figure 31. Credal ranking for sales growth in bootstrapping stage

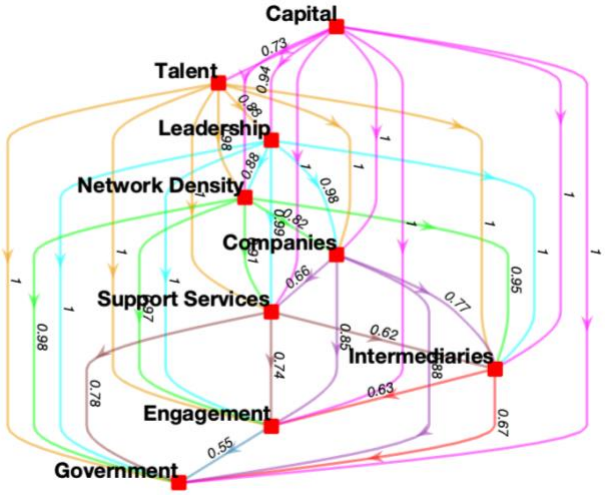

Figure 32. Credal ranking for sales growth in creation stage

Employment Growth

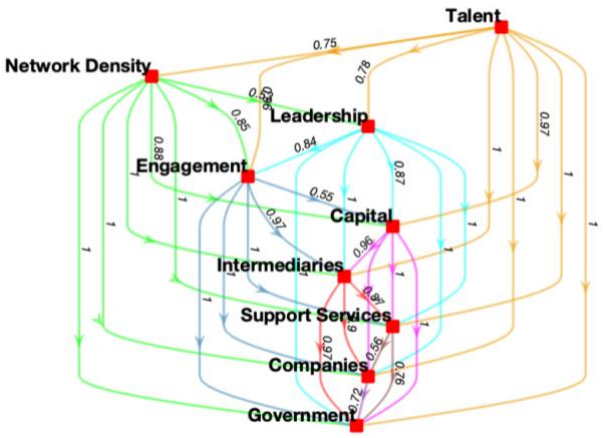

Figure 33. Credal ranking for employment growth in bootstrapping stage

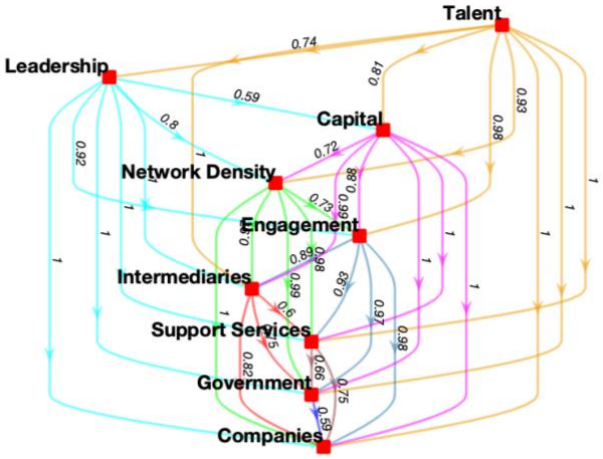

Figure 34. Credal ranking for employment growth in seed stage

Market Share

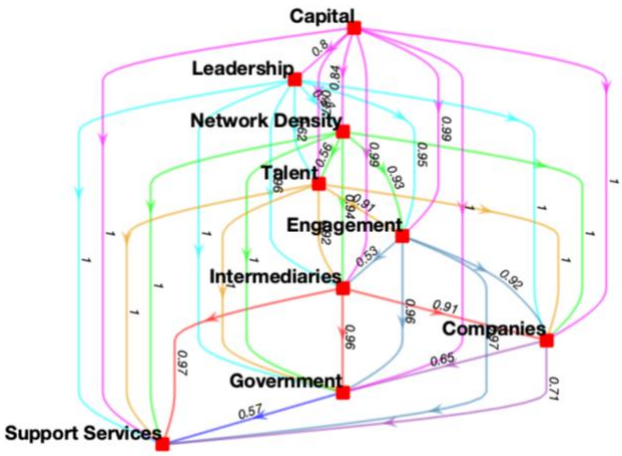

Figure 35. Credal ranking for market share in seed stage

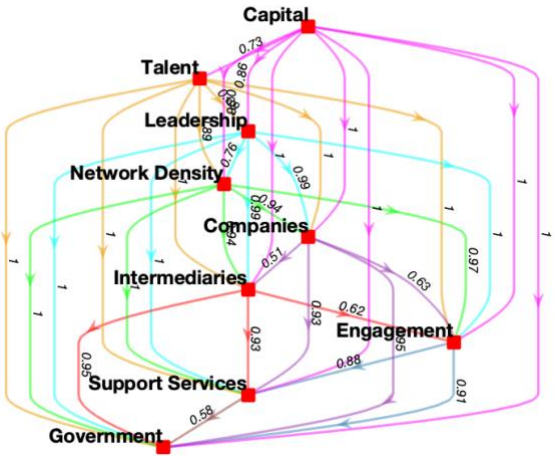

Figure 36. Credal ranking for market share in creation stage

Return on Investment

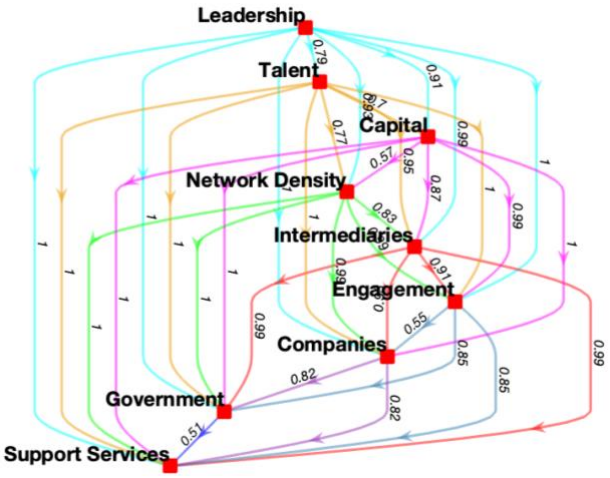

Figure 37. Credal ranking for ROI in bootstrapping stage

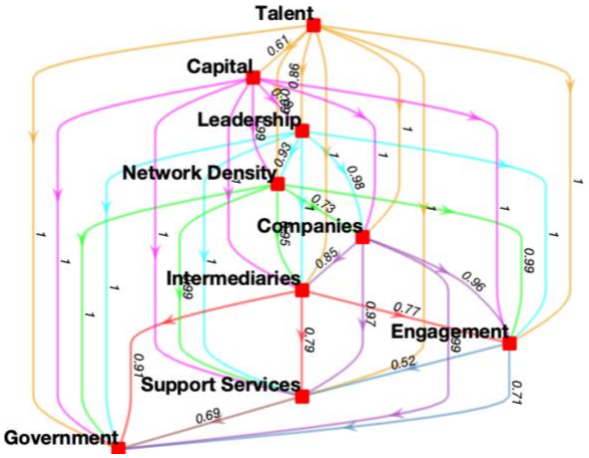

Figure 38. Credal ranking for ROI in creation stage