

Experimenting a methodology to improve the entrepreneurial ecosystem through collaboration and digitalization

Jokin Cearra¹, María Saiz²

¹*Cámarabilbao University Business School - Licenciado Poza, 17, 48011 Bilbao, Bizkaia, Spain, jokin.cearra@camarabilbaoubs.com*

²*University of the Basque Country (UPV/EHU) - Lehendakari Aguirre, 83, 48015, Bilbao, Bizkaia, Spain, maria.saiz@ehu.eus*

www.jsbs.org

Keywords:

Entrepreneurial ecosystem, Collaborative network, Social network analysis, Network effectiveness, ICTs

ABSTRACT

One of the weaknesses detected in the support system of entrepreneurial activity in several locations is its atomization. Thus, to solve it and gain efficiency, the agents, agencies and institutions related to this subject in Biscay started a joint project of strategic reflection in the beginning of 2018. Consequently, a collaborative public network, supported by a digital platform was formally created in June 2018. This paper aims to assess the development process of this public network. Based on the theory about Social Network Analysis and Network Effectiveness, we developed a set of indicators and used the obtained data from the technological platform used by the network. Currently, the network is still in its initial stage, but we have verified that it is working and the interaction among the agents has increased; thus, we can conclude that it is fulfilling the set cornerstones in its development. Our research is a longitudinal study, and our final target is to create a tool to monitor the development and measure its impact on the entrepreneurial ecosystem in Biscay. The network's goal is to improve the support service for entrepreneurs in the province, enhancing the entrepreneurial conditions and having a positive impact on the entrepreneurial ecosystem. Because atomization is a common problem in several locations, the experience might be extended to other places with similar casuistic. We consider it as an original approach because it applies information technologies and social networks to public administration as well.

Introduction

The creation of new companies is one of the many ways an economy grows and generates employment, but, nowadays, it is more important because it constitutes one of the main sources of innovation, and, therefore, is one of the key elements to be competitive in a globalised market. The Global Entrepreneurship Monitor (GEM) Model (Kelley et al., 2012) highlights the importance of the environment to foster entrepreneurial activities, thus contributing to economic development. For this to happen, apart from creating a favourable institutional framework, it is important to ensure that there is an interrelation and collaboration between entrepreneurs, organisations and the different agents of the environment. These relationships shape what Mason and Brown (2014) called an entrepreneurial ecosystem. There is no exact formula to create an entrepreneurial economy but only road maps to refer to as stated by Isenberg (2010).

The system of support of entrepreneurship is part of such an ecosystem and there is a general agreement that it is one of its crucial factors. Spigel (2017) examined its components and pointed out how the state has a major role in supporting them.

Policy makers in Basque Country have been working for years to build a successful entrepreneurship ecosystem. As a result, we see a multitude of entrepreneurial programmes (public and private) promoting entrepreneurship. The GEM report of the Basque Country (Saiz et al., 2018) analyses the Basque entrepreneurial environment, and concludes that public policies are seen both as the main driver of entrepreneurship in the environment and as one of its main brakes. On the one hand, it is recognised as the main support both by the effort in the form of support and promotion of the entrepreneurial activity and by the recognition to its effectiveness. On the other hand, they pointed out it to be an obstacle or brake due to the complexity of the bureaucratic processes, the low efficiency of the unique windows and the demand for greater institutional coordination.

The atomization of the structure of agents and entities

Journal of Small Business Strategy

2021, Vol. 31, No. 01, 51-65

ISSN: 1081-8510 (Print) 2380-1751 (Online)

©Copyright 2021 Small Business Institute®

APA Citation Information: Cearra, J., & Saiz, M. (2021). Experimenting a methodology to improve the entrepreneurial ecosystem through collaboration and digitalization. *Journal of Small Business Strategy*, 31(1), 51-65.

that support entrepreneurial activity is a general problem in the Spanish ecosystem and provokes inefficacy in the use of public resources invested. The issue lies in the large number of existing programs and organisations as well as the overlapping and discoordination of their actions, which means potential entrepreneurs are often unclear about where to go. This produces great inefficiency of the system as a whole and the perception that the institutions are not doing enough to support the creation of new companies. It is an extremely extended problem according to the GEM's special report about organisms and measures to support the entrepreneurs in Spain (Rubio & Sánchez, 2016). The report states that the solution to this problem involves clarifying the existing organisms and measures, their scope and their nature. The clarification would make it easier to guide the entrepreneurs along the long journey from the very beginning of the process of developing an idea to transform it into a consolidated business. The report further suggests the creation of a real network to support entrepreneurship, which integrates all the interventions oriented to the creation of companies, avoiding overlaps and achieving synergies and improvements in the service offered to the entrepreneurs.

In the public sector, resources are often scarce, clients have multiple problems, service professionals are trained in narrow functional areas and agencies maintain services that fit narrowly specified funding categories. Under these conditions, various networks of providers offer a way to dispense services effectively while still maintaining acceptable levels of organisational and professional autonomy (Provan & Milward, 2001).

With the challenge of improving the functioning and coordination of the agents, a project based on the collaboration of all the components of the ecosystem of the province was planned and implemented during the first quarter of 2018, which formally led to the creation of a network called Sarekin. The main distinctive characteristic in Sarekin's design is that it uses a digital platform as the basis for its activity and interaction among its members. This online platform met all the conditions to serve as a gateway to the ecosystem to all the people who could be potential users, and as a tool to energise and connect the agents themselves.

Our research question is to assess the impact of Information and Communication Technologies (ICTs) on the network in order to validate the methodology employed to address the problem of atomization. The purpose of this paper is to verify the usefulness of an ICT-based tool to strengthen a recently created formal network. We start by reviewing the literature, and then set the methodology and indicators to measure its evolution and finish with conclusions at the current stage of development of the process and finalising next steps in our research along with suggesting

some recommendations based on our research experience.

Theoretical Background

In recent decades, it has been very common to use networks to respond to the needs of society in a wide range of areas, and, consequently, there has been a variety of research related to these networks. In the field of public administration, networks are defined 'either as interorganisational collaboration arrangements or as new governance structures designed to achieve a common goal that cannot be achieved (or that cannot be achieved effectively) by one single organisation' (Agranoff & McGuire, 2001; O'Toole, 1997). Developing further, Provan and Lemaire (2012) used the term 'whole' goal-directed network to remark that the key point is a common goal that would typically be addressing some major public problem or task, mainly through provision of service. The task normally is publicly funded at large, even though the participants may be from any sector. There is a huge variety of possibilities, the network may be organised informally or initiated by the government. In addition, while membership in or affiliation with a network is often formalised, making it clear who is 'in' and who is 'out', which is not always the case, sometimes creating fuzzy boundaries.

The support system is only run by and funded publicly. According to Spigel (2017), it is one of the core components of an entrepreneurial ecosystem. Mack and Mayer (2016) showed that it is interesting to analyse the interdependence of the elements of the ecosystem and its evolutionary dynamics by taking into account the institutional framework and the socio-political context in which it has evolved over time and the role of the regional policy acquiring missing elements and facilitating interaction between the elements. They distinguished four stages of ecosystem development starting from its birth, followed by growth, sustainment and ending with decline; each of the stages were characterised with a different mix of entrepreneurial ecosystem domains (Isenberg, 2011). Stam and Spigel (2016) stated that the focus should be on the quality of entrepreneurship rather than the quantity, so that the policy will not be about maximising a certain indicator of entrepreneurship but about creating a context or system in which productive entrepreneurship can flourish.

Camarinha-Matos and Afsarmanesh (2005) discussed virtual organisations and stated that 'a collaborative network is constituted by a variety of entities (e.g., organisations and people) that are largely autonomous, geographically distributed, and heterogeneous in terms of their: operating environment, culture, social capital, and goals'. Nevertheless, these entities collaborate and share skills, competencies and

resources to achieve better common or compatible goals, and a computer network supports their interactions. Unlike other networks, in collaborative networks, participation is an intentional property that derives from the shared belief that together the network members can achieve goals that would not be possible or would have a higher cost if attempted by them individually. A key component of virtual organisations according to Kasper-Fuehrera and Ashkanasy (2001) is that they are ICT-enabled and based on computer-mediated communication. It is a powerful tool to overcome time and distance barriers, but it suffers from the limitation that nonverbal communication, an important component in trust building, is difficult to achieve. Massaro et al. (2019) explored the important role played by trust and control mechanisms regarding knowledge transfer in networks of small- and medium-sized firms, which is important to support firm competitiveness fostering a firm's competitive advantage.

Provan and Lemaire (2012) also remarked that the push for greater collaboration among organisations by the government leads to the question—whether networks should be mandated or emergent. They said it is an important question for the study and practice of public networks, where government agencies often play a much more significant role in initiating the formation of networks (and sometimes sustaining them) than is typically the case in the private sector. This birthed our research object and was pushed by the effort of a public government agency initially. Although very little research has been conducted on this issue, especially research that actually compares mandated versus emergent networks, both costs and benefits are likely to be associated with each approach. While a top-down mandate to form and/or be involved in a network, typically through control of funding, can procure a powerful incentive for organisations to attempt to work together, this approach might be best suited for situations where coordinated work is essential and such effort might only evolve slowly, if at all, without the force of a key government agency or funder. Some examples for the same include networks addressing a major public health issue or a disaster response. At some point, however, if the network is to be truly effective, as envisioned by those government funders, regulators or policy officers who mandated the network in the first place, it must be able to operate through the cooperative and collaborative struggle of the organisations that make up the network, allowing time for building trust and commitment (Moynihan, 2009).

Thus, although rarely studied empirically in the public network literature, a major reason why multi-organisational whole networks may not operate as intended, especially those formed through mandate, may be because of a lack of consideration of how emergent relationships typically form,

are strengthened, and ultimately sustained. These factors as homophily, friendship, trust or the need to acquire legitimacy or power are the basis of successful relationships and cannot simply be discounted by the network planners.

According to previous research on the impact of digitalisation on entrepreneurial initiatives (Rosin et al., 2020), one of the effects of digitalisation is that it supports better collaboration among team members since they can use a digital tool to support communication and engage in an active exchange of information and documents (Hull et al., 2007). Another advantage of using a digital platform as the basis for the network functioning is that it allows to maintain asynchronous relationships, such as discussion forums, shared projects, messages freeing time-synchronicity and place sharing constraints (Hair et al., 2012), so its use might lead to reach greater audience as it avoids the constraints of time and location.

Overall, its use will allow a unified entrance door to the whole entrepreneurship support system. Potentially the impact of the whole system could be improved because more people could be engaged and an integrated service might be provided. Ultimately, the mission of almost all the members of the network is to provide services to the community.

Therefore, our hypothesis is that the technological support through a digital platform contributes to strengthen the cohesion of a collaborative public network enhancing interactions and reinforcing relationships.

Turrini et al. (2010) reviewed the literature and found that there was no one-stop theory about the effectiveness of the network or its determinants. In addition, they verified a lack of empirical studies about research on network outcomes, such kind of work has been scarce and problematic mainly due to the difficulty of determining relevant goals, ways to accurately measure public sector outcomes and the lack of a control group. In literature, we found two types of analysis that might be applied: 1. Social Network Analysis (SNA) and 2. network effectiveness.

Social Network Analysis

Nodes and ties form a social network. Nodes, or actors, within a network can represent individuals, groups, organisations, communities and nations that make up the networks. The relationships between nodes or actors are linked through ties. These ties can indicate communication between nodes, information exchange, formal contractual relations, or friendship ties between nodes. The relationships between nodes or actors can be either formal (legal/contractual) or informal (based on trust and understanding or interpersonal relationships) (Provan, 2007; Scott & Carrington, 2011).

Kapucu et al. (2017) based on a literature review

checked out how SNA as a method has been used for analysing the structural and relational aspects of networks in public administration. Based on the study conducted by Scott and Carrington (2011), SNA approach is useful for studying social processes, social structures and interaction patterns within social structures. SNA presents a set of qualitative and quantitative as well as descriptive and inferential approaches for analysing relational data. Motoyama and Knowlton (2017) applied social network approach to examine how the entrepreneurial ecosystem of St. Louis is structured by analysing the connection among the entrepreneurs and support organisations at multiple layers.

Although the units of analysis are largely organisations, the levels of analysis can vary from individual nodes (ego), to ties between two nodes (dyadic) or three nodes (triadic), to substructures and even to complete systems at the whole-network level of analysis (Borgatti et al., 2018).

Regarding the data required for SNA, it might be collected using both primary data collection methods (e.g., field surveys, online survey questionnaires and face-to-face structured and semi-structured interviews) and secondary data (e.g., archival data from newspapers, news reports, situation reports, online company profiles and databases). These methods are not mutually exclusive.

However, the challenge of getting information concerning the complete network datasets is difficult. Hence, Kapucu et al. (2017) suggested that future research should consider integrating quantitative approaches with qualitative approaches. Another challenge in the field is to study the sustainability, maturation and evolution of networks as systematic longitudinal designs and analysis remain largely missing. These findings lend support to previous research studies that identified the need to integrate quantitative and qualitative designs in network research and to conduct more longitudinal analysis of network change and evolution (Provan et al., 2007; Provan & Lemaire, 2012).

Network Effectiveness

Network effectiveness refers to the effects, outcome, impacts and benefits that are produced by the network as a whole and that can attend to more than just the single-member organisations in terms of increasing efficiency, client satisfaction, increased legitimacy, resource acquisitions and reduced costs (Oliver, 1990). If a network approach is judged to be the best strategy given the demands of the task, success is still far from assured. Building an effective network depends on many factors, all of which must be considered in the design and implementation of a network. Thus, as Provan and Lemaire (2012) remarked, it is important to understand what the research has demonstrated regarding

how a network might be constructed and maintained to be effective and hence minimise the likelihood that the challenges mentioned here might lead to its failure.

It is difficult to assess if the public-sector networks really work, the difficulties to assess network effectiveness are closely related to those evaluating organisations but they are even more complex. Provan and Milward (2001) used an approach consistent with multiple-stakeholder perspective; they suggested evaluating network effectiveness at three level of analysis: the community, the proper network and network's organisational participants. Each level with principals, those who run and fund the activities, agents, those who work, and clients, those who receive the services. To distribute the participants across the levels, agency theory (Fama & Jensen, 1983) is used and a principal in one level might be an agent in another. Thus, the different levels of analysis are:

Community Level

This is a typical level to measure network effectiveness, since the final way to evaluate networks at the community level is by their contribution to build social capital (Putnam, 1993), a term that broadly refers to the valuable resources derived from interpersonal relations in social networks (Portes, 1998). Feldman (2001) who referred to it as an intangible resource that is difficult to quantify but relevant to improve the entrepreneurial environment discusses this concept applied to entrepreneurship. As per Fountain (1998), it is an important outcome of collaboration among agencies and firms. Working together, they learn to understand and trust one another as well as learn whom not to trust. This can be very important not only to deliver the current service but also to develop relationships and work better in the future, for the community's benefit. However, as Weiler and Hinz (2019) pointed out that there is not a single or clear method to measure it.

Network Level

A network must become a viable interorganisational entity to survive, as it is not just one more community provider organisation, but a collection of programs and services provided by a broad range of cooperating but legally autonomous organisations. Thus, it needs the commitment and participation of its members, but it is essential that it has an adequate system of organisation and governance. In this sense, it is different when it comes to a network that has been founded by mandate than when it has emerged informally. In the latter case, the members themselves are willing to take on and share the costs and efforts required by those

functions, whereas, in those created by mandate, it is usually the driving entity that assumes them. Lawless and Moore (1989) and Mandell (1984) labelled this entity as a network broker, though Provan and Milward (2001) used the term network administrative organisation (NAO). They pointed out that in the agency theory context, the NAO is an agent at the community level and a principal at the network level.

The effectiveness of a network and its NAO can be assessed in different ways, many of which depend on the relative maturity and development of the network. The simplest way is controlling the number of organisations that compound the network; there is neither a maximum nor a minimum number of organisations for a network to work properly, but, especially at the beginning, it needs to attract and retain members if it intends to survive as a viable form of social organisation. Once it is established, it is not a matter of attracting more and more members because although being bigger might have political advantages, but it might not mean delivering service effectively. Networks could just have a stable number of agents with peripheral organisations being attracted informally and it is important, at this point, to have a core group of key organisations that provide critical services. As the network becomes bigger, the coordination costs also rise, so the role of NAO is critical. Furthermore, to assess the effectiveness, at this stage, rather than the number organisations, it is better to measure the number of programs and services provided by the network. One key advantage of working in a network is that it can provide a broader range of services than acting as a single-member organisation, but they might not be accurately provided.

Another way of evaluating effectiveness at this level, similar to the SNA, is by assessing the quality and strength of the relationships between and among the network members. At the beginning, ties will be tentative and calculated because the network is new and organisations that have been working independently now are supposed to share resources, information and clients. In the public sector, this is considered to be easier because organisations probably have been working together informally. Nonetheless, all organisations are likely to experience a period of transitional commitment as they move from informal, casual and easily broken ties to relationships that are either formalised or ones that are less formal but based on trust and commitment built on a history of interactions (Ring & Van de Ven, 1994).

One network concept that is particularly salient in this regard is multiplexity, which refers to the strength of ties between network agencies (Scott, 1991). Two organisations are said to have multiplex ties if they are connected in more than one way. Such a tie is stronger than a single link because the relationship is maintained even if one of the two

links is broken. For evaluating network effectiveness, multiplexity can be a particularly useful measure. During the early development of network relationships, ties among most members tend to be relatively weak, or loosely coupled, as agencies test each other's commitment and reliability. As the network matures, some of these links will completely dissolve as agencies discover the relationships that work and the ones that do not. Other relationships may be maintained at a low level, based on the need for only limited contact and involvement among network members providing certain types of services. However, if a network is working well and is to be sustained over time, the ties among many network agencies will gradually strengthen, particularly among those with complementary services. Effective, mature networks might have a majority of agencies connected through two or three different types of programs or client services as well as through general information sharing and friendship. Multiplexity, and, hence the strength of the network, will be high, reflecting commitments among network agencies to one another through multiple activities.

A final way of assessing network-level effectiveness is by evaluating its administrative structure. While the existence of a distinct NAO is not critical to network success, it generally indicates whether a network is viable and if resources have been committed to developing the network or not. While small networks can survive and prosper in the absence of a NAO, such an absence means that network governance is left to network participants. In this case, the community has no designated agent to guide, coordinate and legitimise network activities or to monitor service provision. Such a structure is highly unusual in larger networks and is likely to produce weak network outcomes. Non-NAO networks require a high level of commitment to network goals and to interorganisational cooperation by member agencies that is difficult to sustain. For instance, the study conducted by Provan and Milward (1995) on mental health networks demonstrated that, in Tucson, Arizona, the absence of a strong NAO resulted in largely informal cooperation and coordination among the many providers. Although there were many links across the network resulting in high overall integration among provider agencies, actual services were not well coordinated and client outcomes were not favourable. An important way of assessing network effectiveness through the NAO is to evaluate the extent to which the NAO acquires and then distributes resources for and to the network.

Organisation/Participant Level

Although network and community level outcomes are valid ways of evaluating networks, it is important to remark

that individual agencies and their managers are still motivated partly by self-interest. For organisations considering becoming part of a network, the relevant question is, how can network involvement benefit my agency? Despite the broader value that may accrue to clients and the community at large as a result of the integrated delivery of services through a network, network members still strive to ensure the survival of their own agency. Networks can contribute significantly to organisation-level outcomes. Conversely, the success of network members is critical to the overall network effectiveness, although sometimes network success can be enhanced through the failure of individual members, resulting in some interesting evaluation problems. The importance of network involvement for individual agencies can be evaluated on four primary criteria: client outcomes, legitimacy, resource acquisition and cost. While the benefits of network membership are most apparent to smaller agencies that have low legitimacy and modest capacities to attract resources on their own, these agencies are also likely to experience the greatest costs. In general, agencies will join a network if the agency management believes their specific clients can be better served through integrated services provided by network members and if the agency's services can be offered more efficiently and effectively.

Integration Across Levels of Analysis

Network effectiveness is likely based on interactions across all three levels of analysis. Although each stakeholder group will be most concerned with effectiveness at one particular level of network analysis, it is only by minimally satisfying the needs of each group; principals, agents and clients that network effectiveness can be fully realised. Outcomes at each level of analysis have a direct effect on outcomes at another level. In addition, while each of the broadly defined stakeholder groups is unique conceptually, in practice, they overlap so that outcomes that satisfy one group can at least partially satisfy another group. For instance, while principals, like the general public and funders, may be most concerned with network effectiveness at the community level, effectiveness at this level can only be achieved if most (although not all) individual clients are served reasonably well by network providers. Similarly, participant organisations can often enhance their survival and resource acquisition by responding to the expectations of a NAO, broker or core agency.

At the same time, however, network effectiveness at one level does not ensure effectiveness at the other two levels. For example, one important caveat regarding organisation/participant-level outcomes is that it is not the role of network administrative entities to enhance the well-being of

individual network members. These NAOs work to satisfy their principals by enhancing community-level outcomes. Network-level effectiveness is also emphasised as the NAO strives to ensure its own survival through network growth and diversity of services. Thus, the network is considered successful if the community in general, and an integrated network of providers in particular, better serves clients.

There is an inherent tension in community service networks between the needs and expectations of community-level, network-level and organisation/participant-level stakeholders and the effectiveness measures valued by each group. The resolution of this problem is not easy. It does mean, however, that while community networks that are successful are likely to be effective at all the three levels of analysis, stakeholders' needs and expectations are not necessarily consistent across the levels. For instance, the community may be best served by a network that first focuses on the full range of needs of a particular client group, and then attempts to coordinate and integrate the delivery of required services through specific agencies. This may mean shifting resources from those agencies whose services do not fit network-determined needs or that duplicate the mix of services already provided. Thus, an individual agency may be doing a good job on its own, but the particular services the agency provides may be deemed either nonessential or too costly by the network administrative organisation. This network-level assessment may then force the agency to close down or shift its service focus. In this case, the NAO acts as the agent of its relevant community constituency, representing a particular set of community level interests that are not necessarily consistent with those of some network members.

Provan and Milward (2001) stated that public networks can and should be evaluated at community, network and organisation/participant levels of analysis. The different views of effectiveness at each level need to be considered and resolved, especially in a system that only works effectively through cooperation. Public networks are different from for-profit ones; in the latter, the financial outcome of the members might constitute an indicator of the network effectiveness (Saxton, 1997), while, in the former, the rationale is not in the members level but in the community one. Public-sector networks are most effective when they enhance the capacity of organisations to solve problems and serve their clients.

For a network to work effectively, the needs and interests of the people who work for and support these programs and organisations must be satisfied, while building a cooperative network of interorganisational relationships that collectively provides services more effectively and efficiently than a system based on fragmented funding and services.

A fundamental problem with any effort to evaluate

public networks is that external stakeholder groups tend to judge network effectiveness depending on what specific service providers either do or do not do rather than how well services are provided because of network activities. Stakeholders tend to evaluate, reward or punish individual agencies, regardless of the network's role in enhancing or limiting client outcomes.

Individual organisations have constituency groups while the networks do not, and some organisations are powerful enough to resist pressure from community and network levels. In the case of networks, this might happen when there is a constituency group formed by a coalition of agents active at the network level.

Despite these problems, networks funded by the public sector can and should be evaluated. The task for network organisers is to minimally satisfy the needs and interests of stakeholders at network and organisation levels, while emphasising the broader needs of the community and the clients that the network must serve. Community value may be created by providing clients with better access to services, enhanced utilisation, reduction in unneeded services, lower overall costs, enhanced client satisfaction and improved outcomes. These, in turn, will make the community a more productive and viable place to live. The advantage of public-sector networks is that many of the individuals who are employed by network organisations are professionals, with values and commitment to clients and the public good that often outweigh their commitment to specific programs or organisations. Thus, organisation- and network-level effectiveness criteria can be essentially satisfied by focusing on community-level goals. Public networks must be built and maintained at organisation and network levels, but community-level stakeholders will ultimately judge overall network effectiveness.

Thus, Provan and Lemaire (2012) suggested using process indicators of network effectiveness and identified five broad characteristics of effective networks: involvement at multiple levels, network design, appropriate governance, building and maintaining legitimacy and stability.

Methodology

Research Object

Sarekin network was formally created in mid-June 2018 following the design thinking-based (Brown, 2008) work dynamics that sought to engage all actors in the ecosystem. It was a result of a collaborative and co-creative process described and detailed by Balderas et al. (2020). The task was led by a regional development agency, which has also been the coordinator and promoter of the initiative

from its implementation.

Following the completion of the design and planning phase, the action plan was presented at the institutional level with the intention of giving immediate way to the implementation phase.

Research Setting

Provan and Milward (2001) proposed a framework for network evaluation, and their model focuses on evaluation of networks at three broad levels of analysis: community, network and organisation/participant levels. Three of them must be considered but not necessarily equally:

1. Community Level:
 - a) Social capital as defined by Feldman (2001)
 - b) Providing clients with better access to services, enhanced utilisation, reduction in unneeded services, lower overall costs, enhanced client satisfaction and improved outcomes
2. Network Level:
 - a) Administrative structure
 - b) NAO: how it acts and manages the funds across the network
 - c) Number of organisation members (evolution)
 - d) Number of services and programs uploaded to the platform (evolution)
 - e) Quality of relationships between and among the members
 - f) Number of ties – multiplexity
3. Organisation Level:
 - a) Importance of network involvement
 - b) Client outcomes
 - c) Legitimacy
 - d) Resource acquisition
 - e) Cost
4. Integration (interaction) Across Levels of Analysis:
 - a) Expectations

We are conducting a longitudinal study using quantitative information with a qualitative approach to fill the gaps and understand in depth the evolution of the network and its impact on the entrepreneurial environment. At this moment of the investigation, we are focused on the network level to verify whether methodology and technology are working. Additionally, in the future, the five broad characteristics of effective networks suggested by Provan and Lemaire (2012) -involvement at multiple levels, network design, appropriate governance, building and maintaining legitimacy, and stability- will be assessed.

Data Collection

The aim is to test a methodology to solve the atomization of the support complex to entrepreneurial activity at the province based on developing a collaborative network with technological support. In order to do so, we are dividing the assessment process in three phases corresponding to each level of analysis as shown in Figure 1.

At the current stage, the network is still working mainly in the back-office because it is not working as a whole of-

fering services to the market yet. Therefore, we are going to centre the analysis at the network level, obtaining data from direct observation and through the Bizkaia.network online platform used by the network. The Bizkaia.network online platform was created by the Urbegi Foundation as a part of its LISFAB Bizkaia project. It is a project designed by Urbegi Foundation in collaboration with the BBK Foundation (Factory of Local, Innovative, International, Sustainable and Solidarity Projects). According to the principle of optimizing efforts and resources, it was considered that Bizkaia.

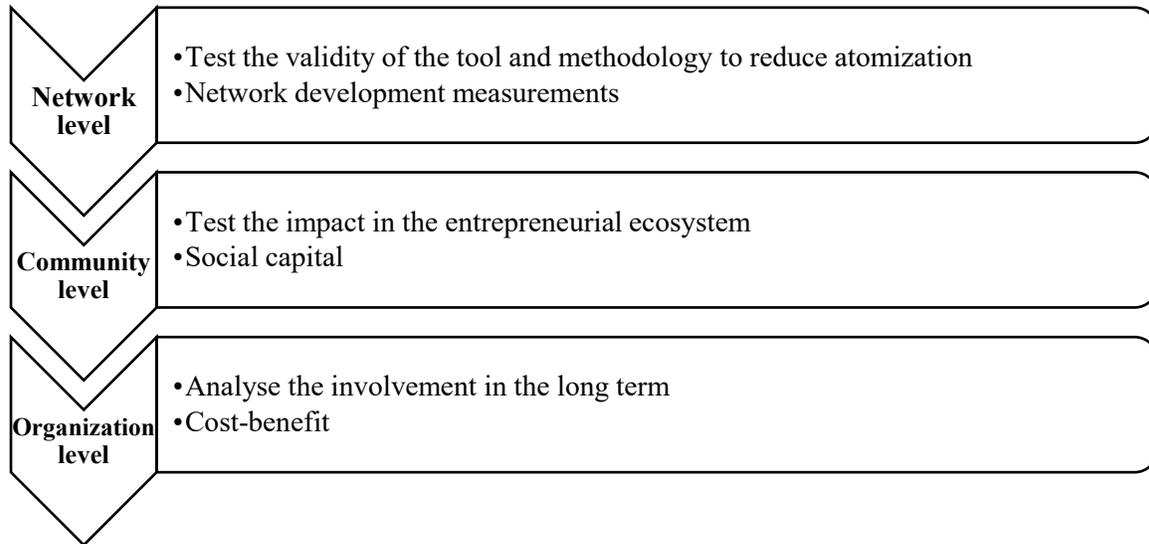


Figure 1. Stages of Development of the Project

network was adapted to the requirements of the network and within it a space was created for Sarekin. This online platform met all the conditions to serve as a gateway to the ecosystem to all the people who could be potential users in the territory.

We have taken three significant cornerstones after the formal creation of the network, in October 2018, was held the first course to learn how to use the platform and members were encouraged to upload or update their profiles and content. In December 2018, the first plenary meeting with all the members invited was held. In October 2019, the next year of planning, in which the network is supposed to start working in front of the public, was being prepared.

Results and Discussion

Administrative Structure

The action plan determined the mechanisms of coordination and control of the actions of the network. In Figure 2, initially, Sarekin was divided into six working branches corresponding to stages of an entrepreneurial project, each of

them with a team of three to five members who are responsible for the coordination and operation of their group. In turn, each area has appointed a representative of the group to the general coordination team.

Each group is organised and works autonomously, with each having its own casuistic and objectives according to the typology of their respective functions. The general coordination group shares the different initiatives and comments on the common interest of the entire network.

Throughout the first year, the coordination team met four times and in June 2019 agreed the plan with the actions to be undertaken in order to definitively launch the network to the public. The entity that ultimately decides the allocation of funds, since it has a budget for this purpose, is the regional development agency that pushed the initiative.

It is expected that from the interaction on the platform itself will emerge new projects and initiatives as Sarekin is intended to be a live network. Moreover, it has been launched, but it is unknown how it will develop in the future, as this will depend on its users.

Preparing the outing to the public, one of the concrete

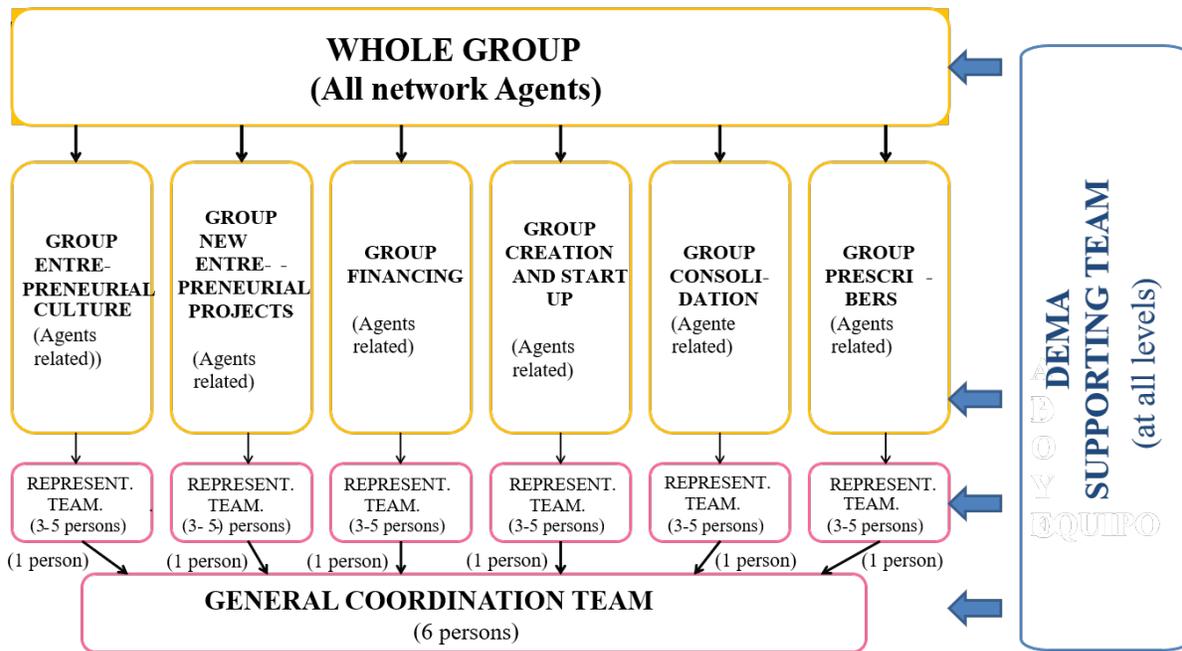


Figure 2. Network Structure
Source: Action plan of Sarekin

actions was the creation of the resource map of the entrepreneurial ecosystem within the Bizkaia.network platform. Once the different agents have internalised the use of the platform in their work processes, the maintenance and constant updating of the same will avoid the obsolescence of the resource map, as it will always be updated and available to everybody in the public area of the online platform.

On the other hand, the thematic working groups, previously referred to, began to form on the same day as the institutional presentation, with the first plenary meeting convened in December 2018 to put them into operation. Thus, at this first plenary meeting, attended by seventy-one representatives of organisations, the members and representatives of each group were defined, and they started working on actions that could be performed on the field of action of each for 2019.

In 2019, the focus was in developing the network internally, while, in 2020, it will be in starting to present externally the support system as a network.

NAO: How it Acts and Manages the Funds Across the Network

The network is a result of a previous collaborative engagement among all the representatives of the entrepreneurial ecosystem in the province, which was launched by one of the public agencies dependant on the Deputy of Biscay that is acting as the supporting team for the whole network.

It has representatives in the six groups that summarises and organises all the information. It also has a budget assigned to this project and decides the ways to distribute it

among the different activities and projects after debating the issues with the coordination team.

Number of Organisations Members of Sarekin

The number of organisational members of the network has almost doubled in one year, while the personal profiles registered and uploaded to the digital platform has also shown increase in numbers but at a lower level as we presented in Table 1.

Represented in the following figures in the network, are all the different typologies of the organisation that provides support to the entrepreneurial activity as shown in the distribution of the 103 members in October 2019.

First, in Figure 3, we distinguish organisation members by type of activity they developed.

Aggregately distinguishing by character, there are 41 public and 62 private institutions as shown in Figure 4.

Every personal member is assigned to one of the six groups depending on the activity they develop and the type of service its organisation provides. In Figure 5, we see the distribution by groups, being 35 profiles pendant of being appointed to a group.

Table 1
Evolution of the membership

	October 2018	December 2018	October 2019
Organisations	56	86	103
Persons	144	150	181

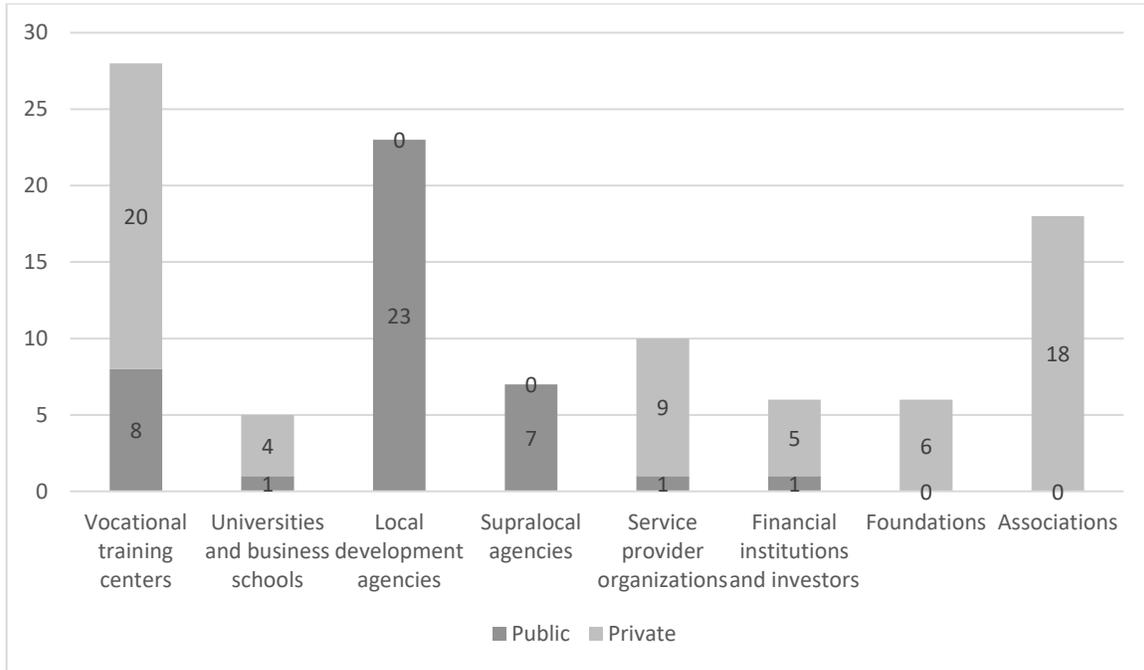


Figure 3. Distribution of Organisational Members by Type of Activity

Number of Services and Programs Uploaded to Bizkaia. Network

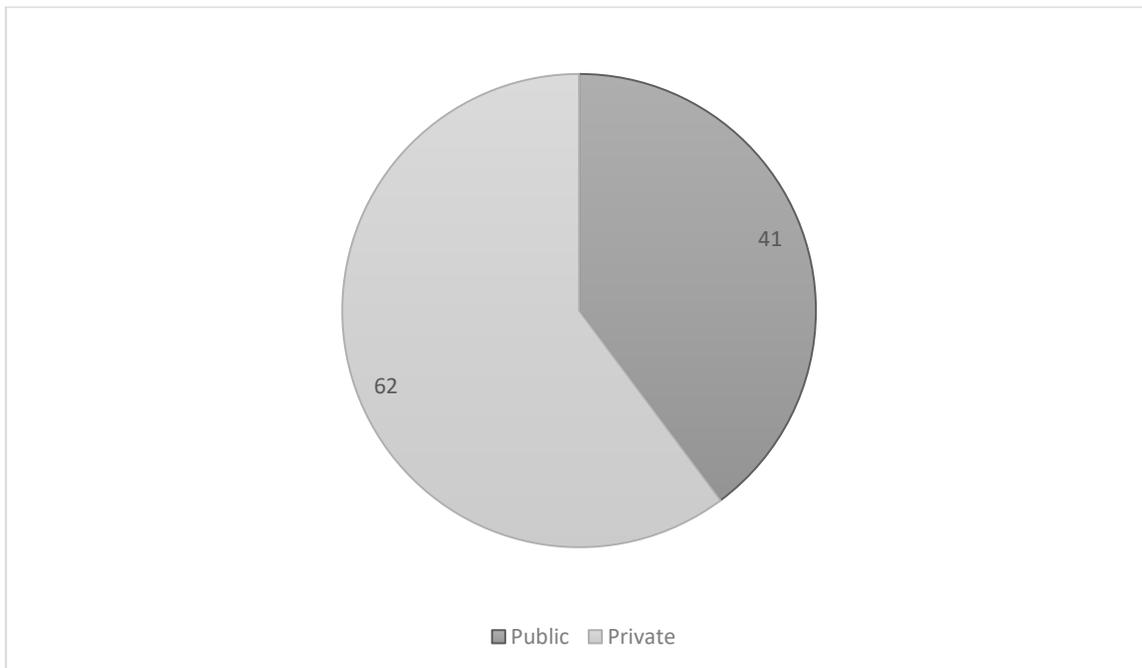


Figure 4. Distribution of Organisational Members by Character

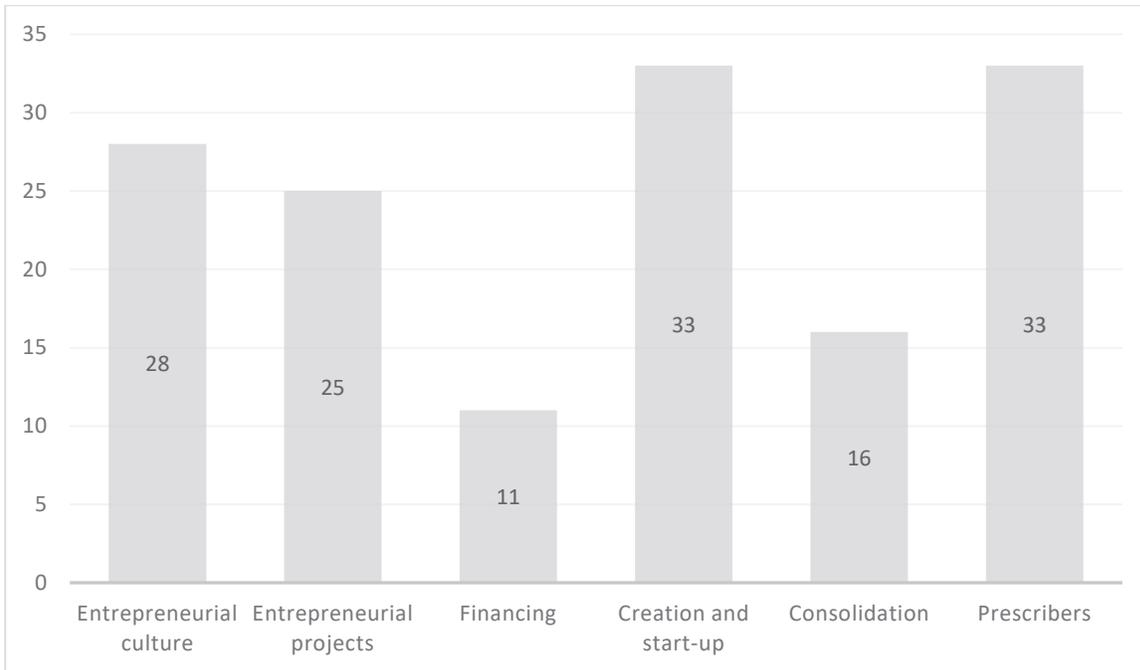


Figure 5. Distribution of Personal Members by Branch of Activity

Table 2 shows the number of services uploaded to the platform almost quadrupled after courses and tutorials about how to manage it were offered.

Table 2
Evolution of the services offered

	October 2018	December 2018	October 2019
Services	17	32	120

Quality of Relationships Between and Among Members

Each group has autonomy to manage its meetings and activities, with the coordination team acting as an organiser establishing priorities and distributing funds among other suggested actions. The coordinators met four times in 2019. One finding in the design phase was that it was the need to have physical meetings, so one plenary meeting where all members were invited is planned every year, and two have already been held in the month of December in 2018 and 2019.

We can look at the digital relationship evolution through Bizkaia.network and as we see in Table 3, it has almost tripled in one year.

In the Figure 6, we can see the map of relationships in the network between considering just connection among organisations taken from the platform in October 2019.

Table 3
Evolution of the connections in the platform

	October 2018	December 2018	October 2019
Relations	1642	2608	4180

Figure 7 shows all the relationships adding all the content available including personal profiles, services offered, news, events, resources, challenges and others.

Number of Ties – Multiplexity

As mentioned above, if more than one person corresponding to each member is involved with the network, it means that the ties among them are stronger. The membership is opened to all organisations interested in joining with the only requirement that they have to fit and have something useful to offer related to any of the six areas in which the network is divided. After the application approval, any personal member of those organisations is welcomed and assigned preferably to different group according to the personal profile. Table 4 shows the distribution of agents with more than one person involved.

It is still too early to make a definitive assessment of the validity of the solution presented for the atomization problem, but we have verified that the hypothesis raised is met and that the use of the ICT-based online platform

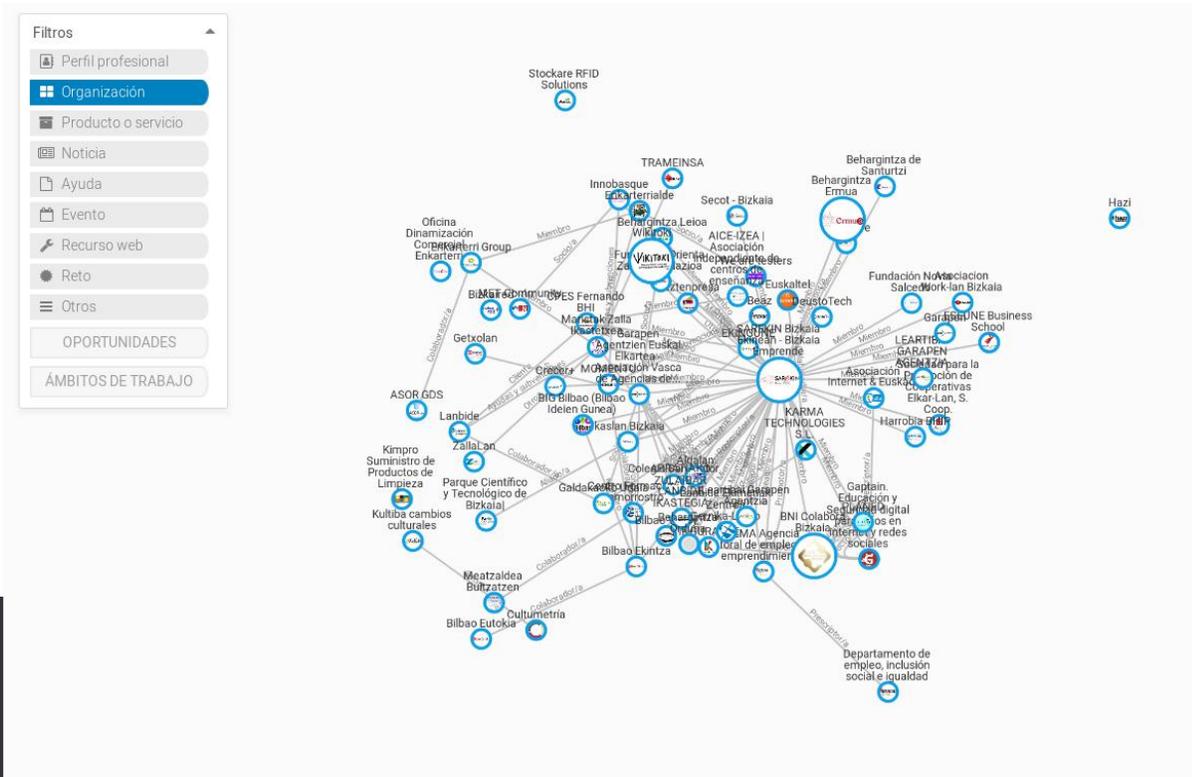


Figure 6. Relationships Among Organisational Members of Sarekin

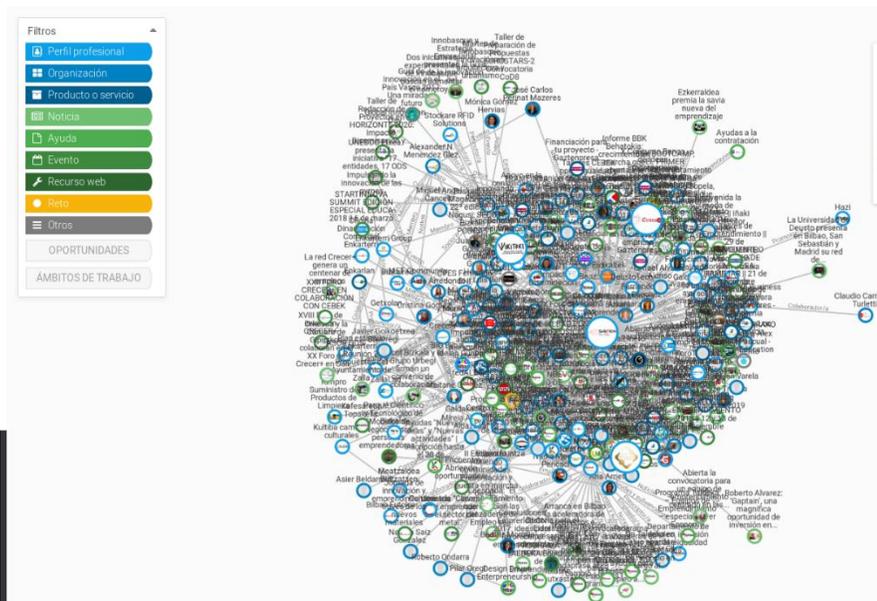


Figure 7. Whole Relationships in Sarekin

promotes cohesion and collaboration among the members of the network. Like any new technology adopted, its use by unaccustomed users and unmotivated to use takes time. Still, as we have seen the metrics of its use have been rising with time. In addition, realize that we are still in the planning phase for its launch to the public soon. It is when

the network itself begins to provide the service to the users for which it was conceived and with the platform itself, becomes the unified gateway for potential entrepreneurs to the entrepreneurship support system in the province.

The research undertaken by Motoyama and Knowlton (2017) in St. Louis using a social network approach was

Table 4
Number of members from key organisations distributed in groups

	Culture	Projects	Financing	Creation	Consolidation	Prescribers	Total
Provincial Support Agent (NAO)	1	1	1	1	1	1	6
Local Support Agent (Biggest One)	1	1	1	2	1		6
Provincial Government	1		2			1	4
University 1	1	1	1	1			4
Chamber of Commerce	1	1		1		2	5
Local Support Agent 2	1	1					2
Local Support Agent 3				1	1		2
Local Support Agent 4	1					1	2
University 2		1		1			2
Vocational Training 1	1	1					2
Vocational Training 2	1					1	2
University 3		1		1			2
Association 1			1		1		2
Association 2	1	1					2
Association 3				1	1		2
Service Organisation		1		1			2
Foundation 1	1					1	2
Foundation 2		1				1	2
Foundation 3	1				1		2

based on interviews with the key actors in the local ecosystem, using an ICT-based platform has the advantage that all the interactions conducted through that mean are traceable. It has to be taken into account that the use of the platform is not completely generalised, so there are still some communications that are through email or other means.

Conclusion

We conclude assuming that the methodology based on collaboration and technology is contributing to alleviate the problem of atomization in the support system of entrepreneurial activities. We verified that the network is fulfilling the settled objectives during its development process and the interaction among its members has increased and strengthened. The use of new technological means like the online digital platform is another challenge and will take time to be a part of its daily use, but as it has been exposed, its online activity is also increasing.

The future is always uncertain; however, the network is expected to be a dynamic organism. In other words, as with many living things, the implementation had to be helped

and supported in the beginning. The regional development agency being the entity that has assumed the task and responsibility of leading and coordinating the initiative in the first stage, with an assumption that the network itself will be able to self-manage in the near future.

As stated atomization of the system of agencies supporting entrepreneurship is a common problem in almost all the Spanish regional entrepreneurial ecosystems, thus the experience might be extended and tested in other environments. It might be useful not only for ecosystems where the public sector is overrepresented but also in sectors where there are mainly private agents. Probably in those cases, governments should be the ones to push or to set incentives in this direction in order to favour the flourishing of new ideas and innovation that should be the focus.

This project has practical and policy implications by the impact of the experience to the particular case of the region. From the academic point of view, our investigation contributes to alleviate the scarceness of research on the impact of support programs on the development of the entrepreneurial ecosystem (Spigel, 2016), and it has further implications by the testing of the use of ICT to reinforce a

public network.

Limitations and Future Research

The first limitation comes from the focus on a single experience. As atomization is both a complex and extended problem, a qualitative method like the multiple case study (Yin, 2014) might be useful to reveal new insights on this topic. Therefore, future research should be both longitudinal to examine the evolution of the original case and comparative to study other alternatives with different casuistic.

Additionally, the impact of the impulse of public action to the private sector at the community level, particularly the development of supportive social capital as defined by Feldman (2001) remains to be measured. It will occur once the network has finally been launched for public use, as now it is working at the back-office preparing all the coordinated service offering that will be made available to current and potential entrepreneurs.

References

- Agranoff, R., & McGuire, M. (2001). Big questions in public network management research. *Journal of Public Administration Research and Theory*, 11(3), 295–326. doi: 10.1093/oxfordjournals.jpart.a003504
- Balderas, A., Cearra, J., Echegaray, L., Garcia Azpuru, A., Morcillo, M., & Mugica, G. (2020). *Creación de la Red de Emprendimiento de Bizkaia. Proceso metodológico de cocreación*. Asociación de Apoyo al Desarrollo Empresarial DEMA - Empresa Garapena.
- Borgatti, S. P., Everett, M. G., & Johnson, J. C. (2018). *Analyzing social networks*. Sage.
- Brown, T. (2008). Design thinking. *Harvard Business Review*, 86(6), 84–92.
- Camarinha-Matos, L. M., & Afsarmanesh, H. (2005). Collaborative networks: A new scientific discipline. *Journal of Intelligent Manufacturing*, 16(4–5), 439–452. doi: 10.1007/s10845-005-1656-3.
- Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The Journal of Law and Economics*, 26(2), 301–325. doi: 10.1086/467037
- Feldman, M. P. (2001). The entrepreneurial event revisited: Firm formation in a regional context. *Industrial and Corporate Change*, 10(4), 861–891. doi: 10.1093/icc/10.4.861
- Fountain, J. E. (1998). Social capital: Its relationship to innovation in science and technology. *Science and Public Policy*, 25(2), 103–115.
- Hair, N., Wetsch, L. R., Hull, C. E., Perotti, V., & Hung, Y. T. C. (2012). Market orientation in digital entrepreneurship: Advantages and challenges in a Web 2.0 networked world. *International Journal of Innovation and Technology Management*, 9(06), 1–17. <https://doi.org/10.1142/S0219877012500459>
- Hull, C. E. K., Hung, Y. T. C., Hair, N., Perotti, V., & DeMartino, R. (2007). Taking advantage of digital opportunities: A typology of digital entrepreneurship. *International Journal of Networking and Virtual Organisations*, 4(3), 290–303. doi: 10.1504/IJNVO.2007.015166
- Isenberg, D. J. (2010). How to start an entrepreneurial revolution. *Harvard Business Review*, 88(6), 41–50.
- Isenberg, D. J. (2011, May 25). Introducing the entrepreneurship ecosystem: Four defining characteristics. *Forbes*. <https://www.forbes.com/sites/danisenberg/2011/05/25/introducing-the-entrepreneurship-ecosystem-four-defining-characteristics/?sh=3a281c1b5fe8>
- Kapucu, N., Hu, Q., & Khosa, S. (2017). The state of network research in public administration. *Administration and Society*, 49(8), 1087–1120. doi: 10.1177/0095399714555752
- Kasper-Fuehrera, E. C., & Ashkanasy, N. M. (2001). Communicating trustworthiness and building trust in interorganisational virtual organisations. *Journal of Management*, 27(3), 235–254. doi: 10.1177/014920630102700302
- Kelley, D. J., Singer, S., & Herrington, M. (2012). *The global entrepreneurship monitor 2011 global report, 2011*. GEM Publishing.
- Lawless, M. W., & Moore, R. A. (1989). Interorganisational systems in public service delivery: A new application of the dynamic network framework. *Human Relations*, 42(12), 1167–1184. doi: 10.1177/001872678904201204
- Mack, E., & Mayer, H. (2016). The evolutionary dynamics of entrepreneurial ecosystems. *Urban Studies*, 53(10), 2118–2133. doi: 10.1177/0042098015586547
- Mandell, M. (1984). Application of network analysis to the implementation of a complex project. *Human Relations*, 37(8), 659–679. doi: 10.1177/001872678403700806
- Mason, C., & Brown, R. (2014). Entrepreneurial ecosystems and growth oriented entrepreneurship. *Organisation for Economic Cooperation & Development (OECD)*, 30(1), 77–102. <http://www.oecd.org/cfe/leed/Entrepreneurial-ecosystems.pdf>
- Massaro, M., Moro, A., Aschauer, E., & Fink, M. (2019). Trust, control and knowledge transfer in small business networks. *Review of Managerial Science*, 13(2), 267–301. doi: 10.1007/s11846-017-0247-y

- Motoyama, Y., & Knowlton, K. (2017). Examining the connections within the startup ecosystem: A case study of St. Louis. *Entrepreneurship Research Journal*, 7(1). doi: 10.1515/erj-2016-0011
- Moynihan, D. P. (2009). The network governance of crisis response: Case studies of incident command systems. *Journal of Public Administration Research and Theory*, 19(4), 895–915. doi: 10.1093/jopart/mun033
- Oliver, C. (1990). Determinants of interorganisational relationships: Integration and future directions. *Academy of Management Review*, 15(2), 241–265. doi: 10.5465/amr.1990.4308156
- O'Toole Jr., L. J. (1997). Treating networks seriously: Practical and research-based agendas in public administration. *Public Administration Review*, 57(1), 45–52. doi: 10.2307/976691
- Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology*, 24(1), 1–24. doi: 10.1146/annurev.soc.24.1.1
- Provan, K. G., Fish, A., & Sydow, J. (2007). Interorganisational networks at the network level: A review of the empirical literature on whole networks. *Journal of Management*, 33(3), 479–516. doi: 10.1177/0149206307302554
- Provan, K. G., & Lemaire, R. H. (2012). Core concepts and key ideas for understanding public sector organisational networks: Using research to inform scholarship and practice. *Public Administration Review*, 72(5), 638–648. doi: 10.1111/j.1540-6210.2012.02595.x
- Provan, K. G., & Milward, H. B. (1995). A preliminary theory of interorganisational network effectiveness: A comparative study of four community mental health systems. *Administrative Science Quarterly*, 40(1), 1–33. doi: 10.2307/2393698
- Provan, K. G., & Milward, H. B. (2001). Do networks really work? A framework for evaluating public-sector organisational networks. *Public Administration Review*, 61(4), 414–423. doi: 10.1111/0033-3352.00045
- Putnam, R. (1993). The prosperous community: Social capital and public life. *American Prospect*, 13(4), 35–42.
- Ring, P. S., & Van de Ven, A. H. (1994). Developmental processes of cooperative interorganisational relationships. *Academy of Management Review*, 19(1), 90–118. doi: 10.5465/amr.1994.9410122009
- Rosin, A. F., Proksch, D., Stubner, S., & Pinkwart, A. (2020). Digital new ventures: Assessing the benefits of digitalization in entrepreneurship. *Journal of Small Business Strategy*, 30(2), 59–71.
- Rubio, B., & Sánchez, M. J. T. (2016). Organismos y medidas de apoyo al emprendedor en España. In I. G. P. Peña (Ed.), *Global Entrepreneurship Monitor: Informe GEM España 2015*, 22 (pp. 139–153). Universidad de Cantabria.
- Saiz, M., Hoyos, J., González-Pernía, J. L., Peña, I., González, N., Guerrero, M., & Urbano, D. (2018). *Global entrepreneurship monitor. Comunidad autónoma del País Vasco. Informe 2017–18*. Publicaciones de la Universidad de Deusto.
- Saxton, T. (1997). The effects of partner and relationship characteristics on alliance outcomes. *Academy of Management Journal*, 40(2), 443–461.
- Scott, J. (1991). Networks of corporate power: A comparative assessment. *Annual Review of Sociology*, 17(1), 181–203. doi: 10.1146/annurev.so.17.080191.001145
- Scott, J., & Carrington, P. J. (2011). *The SAGE handbook of social network analysis*. SAGE Publications.
- Spigel, B. (2016). Developing and governing entrepreneurial ecosystems: The structure of entrepreneurial support programs in Edinburgh, Scotland. *International Journal of Innovation and Regional Development*, 7(2), 141–160. doi: 10.1504/IJIRD.2016.077889
- Spigel, B. (2017). The relational organisation of entrepreneurial ecosystems. *Entrepreneurship Theory and Practice*, 41(1), 49–72. doi: 10.1111/etap.12167
- Stam, E., & Spigel, B. (2016). Entrepreneurial ecosystems. *USE Discussion Paper Series*, 16(13).
- Turrini, A., Cristofoli, D., Frosini, F., & Nasi, G. (2010). Networking literature about determinants of network effectiveness. *Public Administration*, 88(2), 528–550. doi: 10.1111/j.1467-9299.2009.01791.x
- Weiler, M., & Hinz, O. (2019). Without each other, we have nothing: A state-of-the-art analysis on how to operationalise social capital. *Review of Managerial Science*, 13(5), 1003–1035. doi: 10.1007/s11846-018-0280-5
- Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Sage Publications.