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LESSONS TO BE LEARNT FOR INITIATIVES TO PROMOTE CROSS-BORDER COLLABORATION: AN EXPERIENCE IN THE NEW AQUITAINE-EUSKADI-NAVARRE EUROREGION.

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Resumen

Este cuaderno persigue extraer aprendizajes para las entidades que impulsan iniciativas de cooperación transfronteriza para la innovación y para las que están interesadas en formar parte de estas. El estudio describe cómo se analiza el comportamiento de las entidades que tienen un recorrido de medio plazo en la participación en la agrupación de los tres clústeres transfronterizos en el espacio transfronterizo Nueva Aquitania-Euskadi-Navarra en términos de cooperación transfronteriza e innovación. Este análisis se basa en una encuesta realizada a las entidades de Klusteuro (red de clústeres eurorregionales de Nueva Aquitania, Euskadi, Navarra). Por un lado, se profundiza en la importancia otorgada por estas entidades a las barreras que pueden inhibir o facilitar la cooperación transfronteriza (barreras a la cooperación transfronteriza en innovación), para indagar sobre la contribución que la participación en Klusteuro tiene en su superación. Por otro lado, este análisis identifica el tipo de innovación habitualmente desarrollado por estas entidades para entender el papel otorgado al clúster en el desarrollo de un tipo u otro de innovación. Por último, se extraen una serie de aprendizajes sobre el valor que puede aportar la participación en un clúster transfronterizo u otras iniciativas de fomento de la cooperación transfronteriza para la innovación.

Laburpena

Koaderno honen helburua berrikuntzarako mugaz gaindiko lankidetzako ekimenak bultzatzen dituzten erakundeentzat eta ekimen horietan parte hartzeko interesa dutenentzat ikaskuntzak ateratzea da. Aurkezten den azterlanean, Akitania-Euskadi-Nafarroa mugaz gaindiko eremuan mugaz gaindiko kluster taldeetan epe ertaineko ibilbidea duten erakundeen portaera nola aztertzen den deskribatzen da, mugaz gaindiko lankidetzari eta berrikuntzari dagokienez. Azterketa hori Klusteuroko entitateei (Akitania Berriko, Euskadiko eta Nafarroako mugaz gaindiko klusterren sarea) egindako galdetegi batean oinarritzen da. Alde batetik, erakunde horiek mugaz haraindiko lankidetza inhibitu edo erraztu dezaketen distantziei emandako garrantzietan sakontzen da (mugaz haraindiko berrikuntza lankidetzarako oztopoetan oinarritua), Klusteuron parte hartzeak hura gainditzeko duen ekarpena ikertzeko. Bestalde, azterketa horrek erakunde horiek garatu ohi duten berrikuntza mota identifikatzen du, klusterrak berrikuntza-mota baten edo bestearen garapenean duen eginkizuna ulertzeko. Azkenik, mugaz gaindiko kluster batean edo berrikuntzarako mugaz gaindiko lankidetza sustatzeko beste ekimen batzuetan parte hartzeak ekar dezakeen balioari buruzko ikaskuntza batzuk atera dira.

Abstract

The aim of this report is to identify lessons for organisations that promote cross-border cooperation initiatives for innovation and for those interested in taking part in them. The study analyses how the organisations with a medium-term track record in the New Aquitaine-Euskadi-Navarre cross-border cluster grouping behave in terms of cross-border cooperation and

innovation. This analysis is based on a survey carried out among the Klusteuro organisations (network of cross-border clusters in the New Aquitaine, the Basque Country and Navarre Euroregion). The study examines the importance given by these organisations to the barriers that can inhibit or facilitate cross-border cooperation (barriers to cross-border cooperation in innovation), in order to investigate how Klusteuro contributes to overcoming them. This analysis also identifies the type of innovation usually carried out by these organisations to understand the role played by the cluster in the development of different types of innovations. Finally, a series of lessons are drawn on the value that participation of a cross-border cluster or other initiatives that promote cross-border cooperation can bring to the partners involved.

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Executive summary

Actions in the areas of economic development and innovation have increased in importance in cross-border cooperation, with the aim of jointly exploiting opportunities and existing complementarities (OECD, 2013; Lundquist and Trippl, 2010). Since Spain joined the European Union, the relationship and cooperation between cross-border regions such as the Basque regions has resulted in different theoretical political, economic and social activities that engaged the public authorities and the population from both sides of the border.Since 2013, research at Orkestra has focused on better understanding the essential aspects of competitiveness in the NAEN area (New Aquitaine, Basque Country, Navarre), in order to facilitate interaction between the stakeholders involved(Alcalde and Lorenz, 2019; Lorenz and Oleaga, 2020). As a result of the cooperation process in the Competitiv'eko project (2016-2019), three cross-border clusters were formed and now form a network of Euroregional clusters in the NAEN area called Klusteuro.

Klusteuro and its clusters are driven and boosted by a number of organisations focused on fostering cross-border collaboration in NAEN: Pays Basque Chamber of Commerce, Gipuzkoa Chamber of Commerce, Sodena and the NAEN Euroregion.

A cross-border cluster is defined as:

> A sustainable collaboration of a wide array of interconnected, interdependent and complementary stakeholders, localized in border territories of neighboring countries, operating in related industries, possessing [a] similar level of technological development and co-creating goods and services that deliver [a] synergy effect in [the] development of [the] respective territories. (Mikhaylov, 2013, p. 1734)

In this new institutional context, it is important to go further in researching cross-border cooperation and investigate the effects of participating in cross-border clusters from the perspective of the partners. In order to address this issue, Orkestra administered a questionnaire to the participating organisations (companies and scientific-technological centres) in the three clusters that were part of Klusteuro in 2021: ADDITIVALLEY (additive manufacturing), BigDatia (artificial intelligence and Big Data); and INNOVMEDICA Alliance (customised medical devices). The questionnaire first investigated the importance placed by these entities on the barriers that may either inhibit or facilitate cross-border cooperation, in order to ascertain how participating in a cross-border cluster can contribute in overcoming these barriers.

The Klusteuro organisations believe that it is mainly *institutional and cultural barriers* that hinder mutual learning and innovation processes at cross-border level. Institutional and cultural barriers refer to the existence of laws, regulations, CBC (Cross Border Cooperation) support institutions, differences in language, business culture and norms and values that play a role in the development of CBC for innovation (Makkonen et al. 2013). They perceived differences in laws and regulations, language differences, and the support of local and regional authorities

for cross-border cooperation as being the most important aspects for cross-border cooperation.

The remaining barriers were *geographical barriers* (accessibility of interacting in terms of time and related cost for knowledge exchange); *technological and cognitive barriers* (proximity of the knowledge base); and *organisational and social barriers* (differences in the rates of autonomy and control governing organisations and the way they interact). These were rated by the Klusteuro organisations as being of medium-low importance for cross-border cooperation.

Regarding the effect that participation in the cluster has had on overcoming these barriers to date, the organisations perceived that the cluster helps them to overcome both institutional and cultural barriers, and organisational and social barriers. Among institutional and cultural barriers, the impact of the cluster is mainly perceived in terms of how it helps reduce differences related to language, business culture, norms and values; and among organisational and social barriers, respondents reported that the cluster supported them in understanding the different ways of collaborating or working at the organisational level, which are also decisive in facilitating cooperation between entities.

The study also explores the type of innovation typically carried out by these organisations in order to understand the role given to the cluster in fostering one type of innovation or another among cross-border cluster partners. The organisations surveyed prior to joining the cluster carried out mainly *product and service innovation* to a much greater extent than other types of innovation (organisational, business model, and marketing strategy innovation). In the same vein, their participation in the cluster was mainly triggered by an interest in developing product innovation, followed by service innovation.

The Klusteuro-based analysis makes it possible to learn some lessons that are intended to stimulate reflection aimed at public and private organisations that promote cross-border cooperation initiatives. The lessons learnt include:

- **Diagnosing needs:** The organisations that facilitate cross-border clusters should base their activity on the diagnosis of the needs of the partners in cross-border cooperation and innovation. The Klusteuro case study presented shows the type of aspects that can be explored in this diagnosis, focusing on understanding the barriers to cross-border cooperation perceived by the partners and the type of innovation to be developed in the cluster. This could guide the organisations responsible for promoting cross-border cooperation in shaping mutual learning processes between territories.
- **Building bridges:** Cross-border clusters act as a bridge between organisations (companies and science and technology centres) from different territories to help overcome barriers to cooperation that have to do with business, organisational, cultural and social culture.
- **Reducing technological and cognitive barriers:** To foster collaborative R&D between companies in cross-border territories, clusters should work on reducing technological and cognitive barriers, which are perceived as restricting collaboration between organisations in neighbouring territories. Awareness-raising actions in this regard can help to lower this barrier.

- **Increasing the impact on small businesses:** Participation in cross-border clusters has a greater impact on smaller firms and in the field of customised medical devices, mainly in relation to institutional barriers.
- **Showcasing the value of networking:** Networking is one of the most attractive features of cross-border clusters. The valuable relationship opportunities arising from participation in this type of initiative are held in high regard, as they make it possible to know and work with different types of organisations from different territories.
- **Collaborative innovation impact:** Participation in cross-border clusters does foster collaborative innovation, notably in product and service innovation.
- **Increasing product and service innovation:** Prior to their participation in Klusteuro, the case study participants on average placed low levels of importance on collaborative innovation. However, participation in a cross-border cluster was seen to have a positive impact on product and service innovation. Although other modes of innovation (organisational, business model and marketing strategy innovation) we are not identified as a priority for Klusteuro's member organisations, participation in these initiatives has given them added value and is therefore an area of work of that clusters should maintain and strengthen.

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1. Introduction

Cooperation between border regions has various objectives which include economic cooperation, the search for solutions to environmental challenges, and the creation of links between local infrastructures. It also aims to bring citizens on both sides of the border into contact with each other. The development process of the European Union entails a progressive weakening of inter-state borders and also of psychological borders, albeit at a slower rate. This directly affects the economy and social relationships in the areas concerned. Traditionally, cross-border cooperation (CBC) used to focus on spatial planning, transport and environmental issues, and was primarily aimed at compensating for or mitigating these disadvantages. Over time, however, actions in the field of economic development and innovation have gained importance; their aim has shifted to jointly exploiting opportunities and complementarities rather than tackling problems (OECD, 2013; Lundquist and Trippl, 2010), as well as promoting cooperative values in the political, social and cultural spheres that facilitate economic relations (Fabián, 2013).

Since Spain joined the European Union, the relationship and cooperation between cross-border regions such as the Basque regions within the NAEN territory (New Aquitaine, Euskadi, Navarre) has resulted in different political, economic social actions. These have been theoretically aimed at collaboration between the public authorities and the population from both sides of the border.

The research carried out by Orkestra since 2013, has had an experimental component, involving interaction between the actors in the NAEN region, coupled with an analytical component based on a better understanding of the main aspects of competitiveness in the NAEN region. The first period of this experimentation process spanned from 2013 to 2016, and the analyses carried out were used to create opportunities for inter-cluster dialogue. Clusters proved to be key actors in identifying areas of convergence and cross-border interest, but they were insufficient to trigger business cooperation (Alcalde and Lorenz, 2019).

The second period spans from 2016 to 2022 and is centred on analysing and boosting cross-border cooperation with a focus on business. With this in mind, Competitiv'eko was designed and set up with the aim of developing an ecosystem for cross-border collaboration between companies and organisations. Following the Competitiv'eko methodology, the project resulted in the creation of three cross-border clusters in additive manufacturing (ADDITIVALLEY); in artificial intelligence and Big Data (BigDatia); and, in customised medical devices (INNOVMEDICA Alliance). These cross-border clusters, funded by the Euroregion and co-funded by the 26 partners, continue to work on generating cooperation projects between the partners and strongly focus on identifying opportunities for collaboration after the project is completed. These clusters have now formed a network of Euroregional clusters of New Aquitaine, Euskadi, Navarre called Klusteuro.[1]

[1] https://www.klusteuro.eu/

Following definition of cross-border clusters provided by Mikhaylov (2013), the cross-border clusters formed in Competitiv'eko could be defined as:

> A sustainable collaboration of a wide array of interconnected, interdependent and complementary stakeholders, localized in border territories of neighbouring countries, operating in related industries, possessing [a] similar level of technological development and co-creating goods and services that deliver [a] synergy effect in [the] development of [the] respective territories. (Mikhaylov, 2013, p. 1734)

COMPET'plus is a project that builds on the broad range of experience outlined above. The project, which runs from 2020 to 2022, is 65% funded by the European Regional Development Fund (ERDF) through the Interreg V-A Spain-France-Andorra Programme (POCTEFA 2014-2020[2]). The aim of this project is: 'to boost business competitiveness and innovation of SMEs through cross-border cooperation between the three territories involved (New Aquitaine, the Basque Country and Navarre) in the field of R&D&I'.

As in Competitiv'eko, the initial hypothesis is that the analysis of the joint RIS3 (from its abbreviation Research and Innovation Smart Specialisation Strategies) is a starting point for understanding where the convergences and innovation challenges shared by the economic and scientific-technological stakeholders of the three territories lie (Competitiv'eko, COMPET'plus). This approach to cross-border cooperation is based on the potential of neighbouring regions to grow through innovation. Innovation is an iterative process, involving interaction between businesses, education stakeholders, knowledge infrastructures and/or user communities.

COMPET'plus focuses on new areas of cross-border cooperation that emerge from the reflections produced for this project by Lorenz and Oleaga (2020) on the analysis of the RIS3 challenges faced in the multi-stakeholder environment in NAEN. New research questions arise in this context as a way of understanding how business cooperation operates in the cross-border sphere. The perspective is that taken by the organisations that see CBC as an opportunity to innovate and collaborate, and to learn lessons for the stakeholders who are responsible for promoting cross-border cooperation.

Specifically, the research question is:

- What is the effect of participating in cross-border clusters for the partners in terms of cross-border cooperation and innovation?

In the case study described in this report, the aim is to understand how the organisations with a medium-term track record in cross-border clusters behave in terms of cross-border cooperation and innovation (from their start in 2019). In this case, the organisations are represented by businesses and scientific-technological centres that are part of Klusteuro. The

[2] POCTEFA is a European territorial cooperation programme created to promote the sustainable development of the border region between its three member countries. This study is part of POCTEFA's activities.

purpose of this analysis is to draw some lessons for public and private organisations that promote cross-border cooperation initiatives. In addition to cross-border clusters, these initiatives can take other forms of cross-border cooperation, such as cross-border clusters (bringing together supply and demand) and cross-border value chains. The organisations responsible for implementing these initiatives are represented in the case study by the Chambers of Commerce of Gipuzkoa and Bayonne Pays Basque, the Organisation for the Development of Navarre and the NAEN Euroregion.

In order to meet this objective, this study examines the expectations of organisations participating in Klusteuro in terms of innovation and cross-border collaboration. This analysis will serve as a basis for understanding the value that participating in such initiatives has for strengthening cross-border cooperation, and reflecting on how new cross-border cooperation initiatives can be improved.

This report is structured as follows: the second section includes the Klusteuro case study and analyses the results of the questionnaire administered to organisations that participate in the three clusters. These analyses are divided into two sub-sections. The first section describes the results regarding the main barriers to cooperation that these organisations perceived when cooperating across borders. It also includes the assessment that these organisations made of the extent to which being part of cross-border clusters helped them to overcome these barriers. The second sub-section contains the results of the questionnaire in relation to the innovative activities usually engaged in by the participating organisations, and identifies the main innovation interests to be developed in the cross-border cluster as reported by these organisations. The last section outlines the lessons to be learnt from the second section for any institutions and/or organisations that intend to start initiatives to promote cross-border cooperation.

2. Collaborative initiatives and barriers to cross-border cooperation in innovation

The case study presented in this report is based on the results of a questionnaire administered to the organisations involved in the Klusteuro clusters to identify the lessons to be learnt for the development of cross-border cooperation initiatives within the COMPET'plus project.

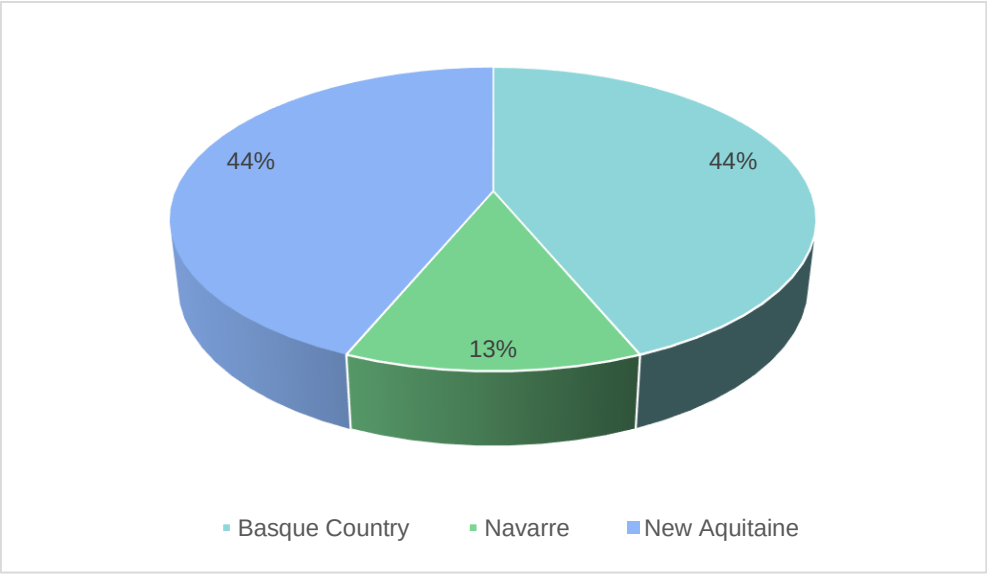
Section 2.1 provides a demographic analysis of the organisations involved in the case study. Section 2.2 describes the results drawn from the most important barriers to cross-border cooperation as perceived by these organisations perceived. It also includes the assessment that these organisations made of the extent to which being part of cross-border clusters helped them to overcome these barriers.

Section 2.3 includes the results of the questionnaire in relation to the innovative activities usually carried out by the participating organisations in order to identify the extent to which the cross-border cluster supports them in carrying out of one type of innovation or another.

2.1. Demographics of the organisations

There were 16 organisations that actively participated in the survey, out of the 26 that were part of Klusteuro when the questionnaire was administered (last quarter of 2021). The participating organisations are largely located in New Aquitaine and the Basque Country (43.75%, respectively), whereas only 12.5% of the participant organisations are based in Navarre.

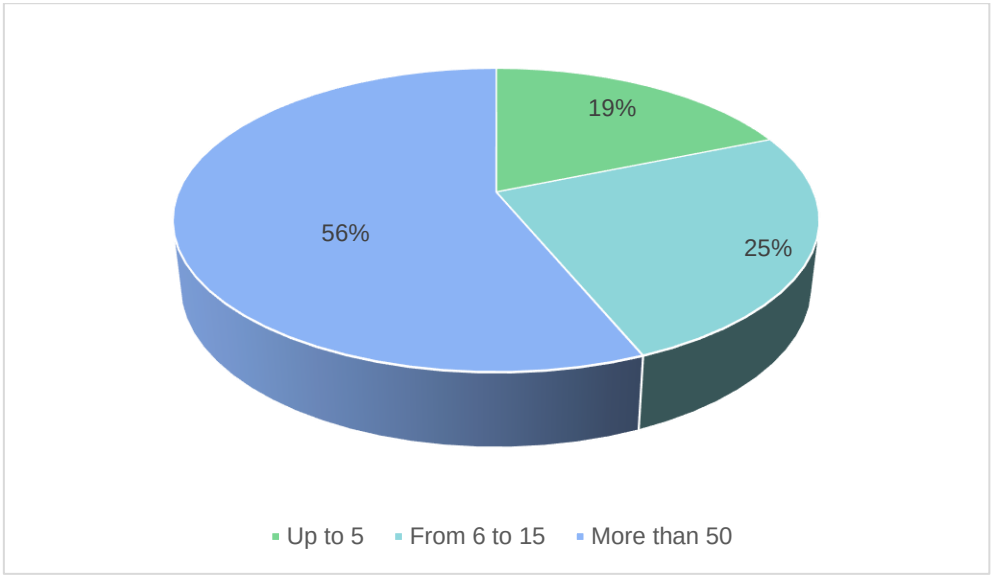
Figure 2.1 Geographical location of the organisations participating in the questionnaire



Source: Questionnaire developed by the authors

More than half of the organisations that participated in the questionnaire have more than 50 employees, and a quarter of the organisations have between 6 and 15 employees.

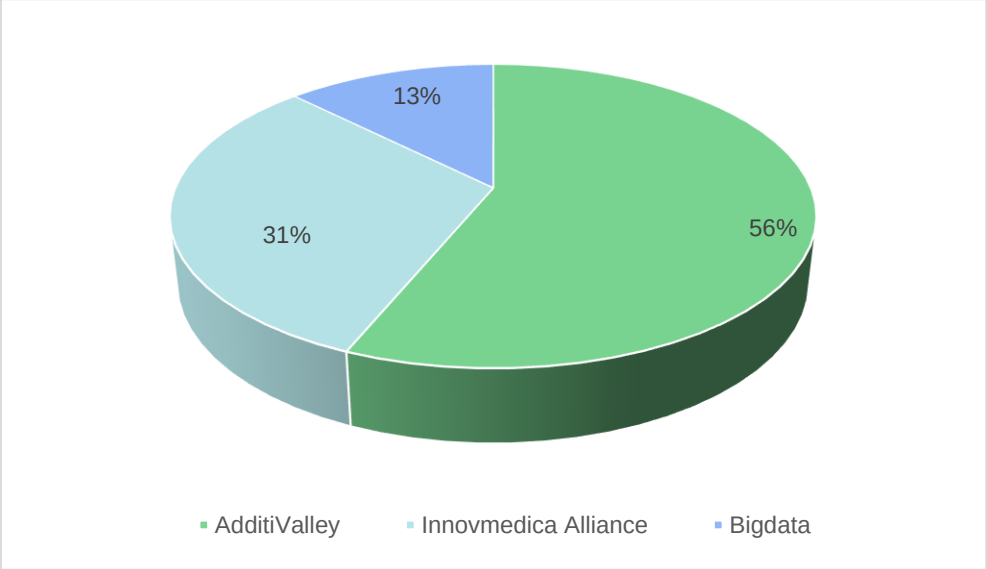
Figure 2.2 Size of the organisations



Source: Questionnaire developed by the authors

In terms of their membership of Klusteuro, the organisations participating in ADDITIVALLEY were the most active, as they represented more than half of the sample; a third of the organisations are actively involved in the INNOVMEDICA Alliance, and only 12.5% of the organisations that answered the questionnaire were members of BigDatia.

Figure 2.3 The Klusteuro cluster they belong to



Source: Questionnaire developed by the authors

2.2. Barriers to cross-border cooperation

Proximity is a concept used to understand the economic opportunities for businesses and areas that are engaged in mutual learning and innovation processes (Boschma, 2005; Torre, 2008). The French school of proximity dynamics has made a fundamental contribution to the literature on innovation by recognising that proximity goes beyond the geographical realm and covers a broader spectrum of dimensions which it classifies into five domains of proximity: cognitive, organisational, social, institutional, and geographical (Boschma 2005). Physical or geographical proximity refers to the accessibility for interaction in terms of time and cost related to the distance that allows interaction for knowledge exchange to take place. The rest of the types of proximity are related to the non-spatial aspect of collaboration and knowledge exchange between the stakeholders involved. It includes the cognitive dimension (closeness of the knowledge base); the institutional dimension (differences in formal and informal institutions, laws, regulations and also differences in culture and language); the organisational dimension (differences in the levels of autonomy and control that govern organisations and influence how organisations interact to innovate); and the social dimension (related to the personal way of interacting).

As cross-border cooperation is a phenomenon of cooperation in innovation between neighbouring regions, some studies have been analysed for a better understanding of cross-border dynamics, based on the role that different combinations of proximity can play as facilitators or inhibitors of cross-border cooperation.

The OECD (2013) analysed different European cross-border areas and classified the different types of proximity into three main blocks relating to framework conditions (geographical and

socio-cultural proximity), the innovation system (mainly focused on cognitive proximity), and governance (focused on institutional proximity). These blocks serve as a basis for analysing the status of integration of the cross-border innovation systems under analysis (e.g. Oresund or Helsinki-Tallinn, among others).

Lundquist and Trippl (2013), following on from the study by Trippl (2010), used proximity as a basis for categorising the stages of cross-border integration and conceptualising the Cross-Border Regional Innovation System (CBRIS). Thus, they identified different phases of development of a CBRIS in their evolutionary model of integration, where higher phases were considered to be more suitable spaces for knowledge generation. In this model, the intensity and results of cooperation in each phase are influenced by the existing distances in the types of proximity analysed in the neighbouring territories. In general, greater integration is linked to a shorter distance in the different types of proximity analysed. They are used the analysis of the types of physical, functional and relational proximity (including cognitive, organisational, socio-cultural and institutional proximity) that are considered important in conceptualising and categorising the differences between the territories in a cross-border area, and they discussed their impact on cross-border knowledge interactions.

In this report, barriers to cross-border cooperation are analysed through the concept of proximity as facilitating or inhibiting aspects of cross-border cooperation. This builds on the work of Makkonen and Williams (2017), who investigated how different types of proximity and their impacts could be measured in a cross-border area. The aim of this study is therefore to contribute to the proximity literature by testing and experimenting with a system for measuring the different types of proximity that act as facilitators or inhibitors of cross-border cooperation. The questionnaire carried out with the organisations within the cross-border cluster is constructed on the basis of the proximity measurement system proposed by these authors. **Table** 2.1 includes summarises the measurement system that served as a basis to design the questionnaire in this study.

Table 2.1 Proximity measurement system

Type of proximity analysed	Elements analysed
Geographical	• Travel times • Travel costs • Border/Customs formalities
Institutional and cultural	• Laws and regulations • Support from local and regional authorities • Support from local business associations (chambers, clusters, agencies, etc.) • Language differences • Differences in corporate culture

	• Differences in norms, values and customs
Technological and cognitive	• Technological knowledge • Technological requirements. For example: software, instruments, etc. • Educational background
Organisational and social	• The organisational context and the way things are done • The role and modes of social networking

Source: Makonnen et al. (2017)

Based on the proximity measurement system suggested by these authors, the questionnaire administered in this study incorporated a series of questions that aimed to measure the importance given to each type of distance; it also investigated the contribution of cross-border clusters in overcoming the barriers to cross-border cooperation based on the concept of proximity described. The questionnaire, included in 0, includes the aspects covered in the responses from Klusteuro organisations in relation to barriers to cross-border cooperation and innovation at two different points in time. The first point in time was before being part of the cross-border clusters (Block 2 of the questionnaire in 1); and the second was after being part of the cross-border cluster (Block 3 of the questionnaire in Annex 1). The aim of the analysis of the differences in their views at these two points in time was to understand to what extent their participation in Klusteuro has helped them to overcome these barriers.

2.2.1. The importance of barriers to cross-border cooperation and the impact of cross-border clusters

Figure 2.4 summarises the results of the survey of Klusteuro member organisations regarding the distances perceived by Klusteuro organisations in mutual learning and innovation processes at cross-border level. The measurement is done by barriers to cross-border cooperation according to the five categories of barriers detailed in Table 2.1. The results of the survey of Klusteuro organisations meant that each barrier could be positioned in terms of the average importance that the organisations associated with the cross-border clusters attached to each barrier (1 being 'not very important' and 5 being 'very important'); and the impact that participation in the clusters is having in overcoming them (the impact of cluster 1 being 'not at all important' and 4 being 'extremely decisive).

In general, the respondents described the set of barriers to cross-border cooperation as being of medium importance (between 2 and 3), although there were differences according to the type of barrier analysed. Institutional and cultural barriers were perceived to create the greatest distances to collaboration by Klusteuro organisations. Specifically, they perceived differences in laws and regulations, language differences, and the support of local and regional authorities for cross-border cooperation (CBC) as being the most important aspects for developing cross-border cooperation. The rest of the barriers (geographical, technological and cognitive, and

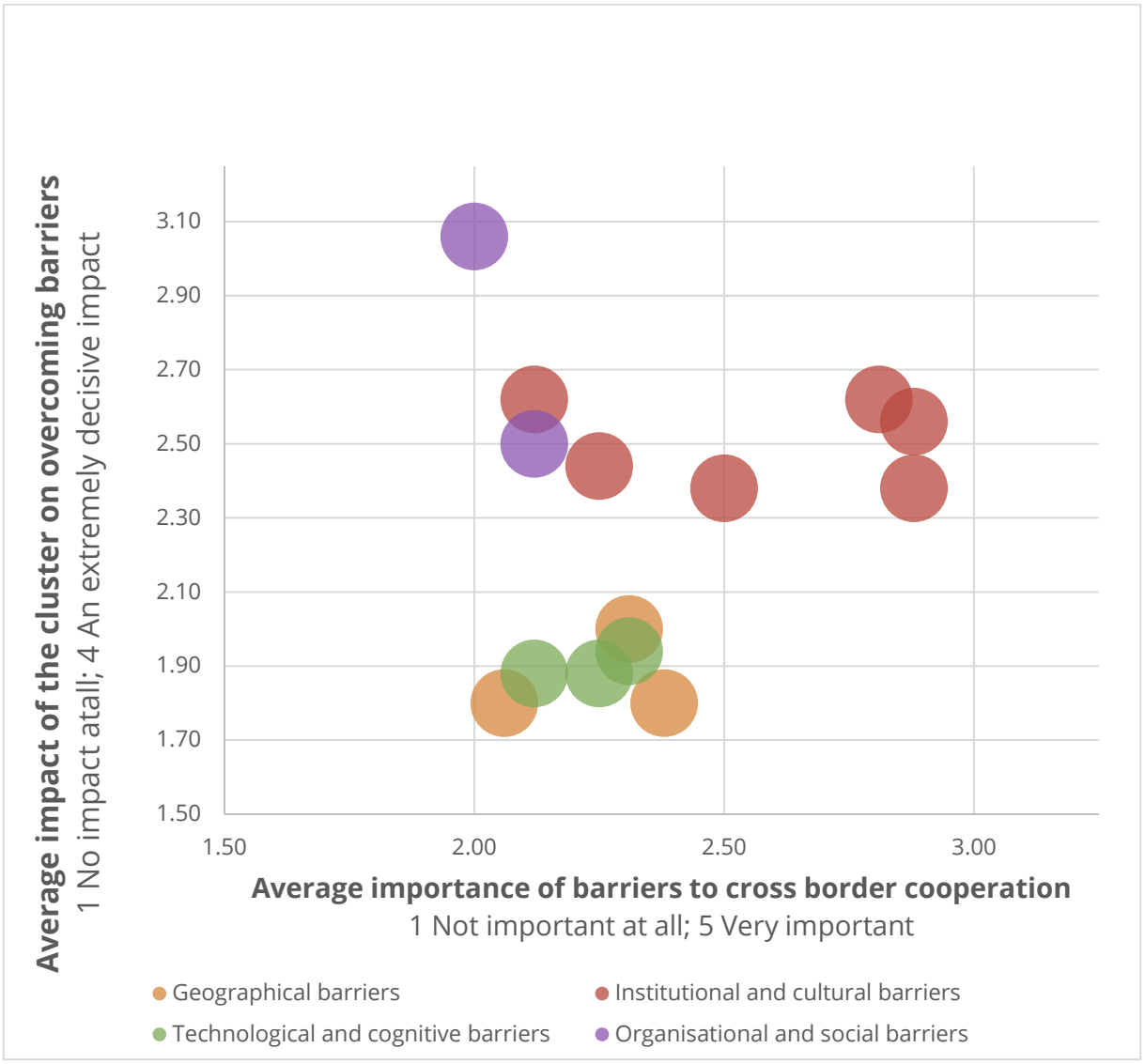
organisational and social barriers) had a similar importance among them and for all the organisations.

Figure 2.4 shows how the cluster organisations perceived that participating in clusters helped them to overcome barriers to cross-border cooperation. Thus, they identified a first group of barriers where the impact of the cluster was medium-low (between 1.88 and 2, with the impact of the cluster 1 being 'not important at all' and 4 being 'extremely decisive'). These were technological, cognitive, and geographical barriers. Clusters help to an intermediate-low extent to reducing the geographical distance between partners so that knowledge exchanges for innovation can take place. Likewise, the organisations in the clusters perceived that clusters had a medium-low contribution in helping them to reduce the differences in technical, technological and educational knowledge and that they may facilitate cross-border cooperation in innovation.

There was a second block of barriers on which the clusters had a medium-high impact (between 2.38 and 3.06, with 1 being 'not important at all', and 4 being 'extremely decisive'). These were institutional, cultural organisational and social barriers. It is possible to recognise the effect of clusters in helping to reduce differences between partners in terms of language, business culture, norms and values. They also had an impact on understanding the different ways of collaborating or working at the organisational level, which are also instrumental in facilitating cooperation between organisations (Knoben and Oerlemans, 2006).

In summary, an overview of the importance that cluster organisations attach to CBC barriers and the impact that cluster participation has had on overcoming these barriers to date suggests that clusters have had a medium impact on institutional and cultural barriers, which are the ones that organisations considered most important. However, the clusters have had a very high impact on reducing the differences in the way they network, which was not identified by the organisations as one of the most important aspects to collaborate on.

Figure 2.4 Average importance and impact of clusters on barriers to cross-border cooperation



Source: Developed by the authors

The results suggest that synergies and complementarities may be emerging between the organisations that are part of the cross-border clusters, as to the general perception of existing distances is medium. Based on the study by Lundquist and Trippl (2013), these clusters still have some way to go to reach a higher stage of integration where there is no perceived distance or barriers of any kind and it becomes a highly integrated system.

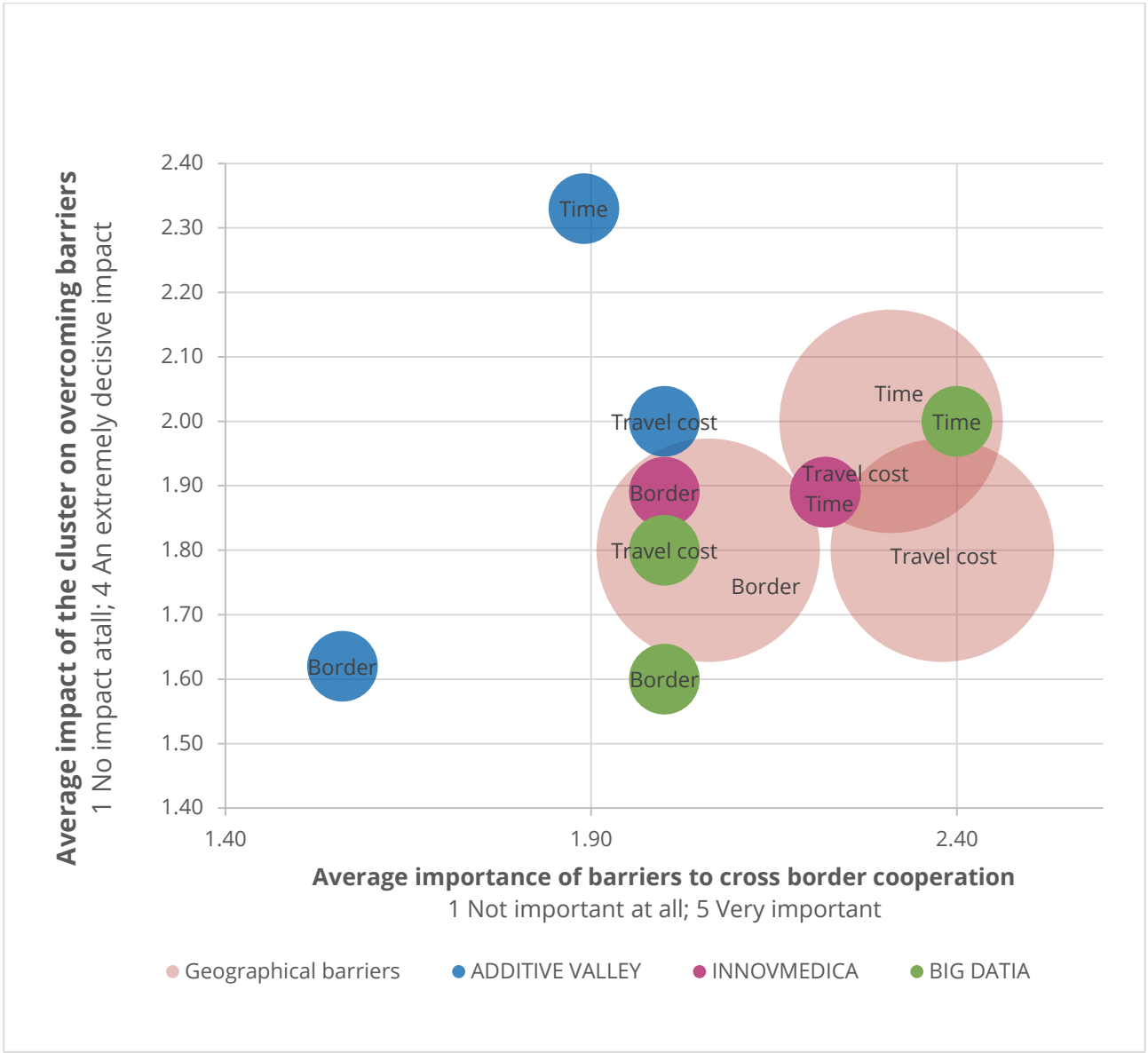
In the following paragraphs, the different groups of barriers to cross-border cooperation are analysed, and the behaviour of the organisations is identified according to the cross-border cluster in which they participate and organisation size.

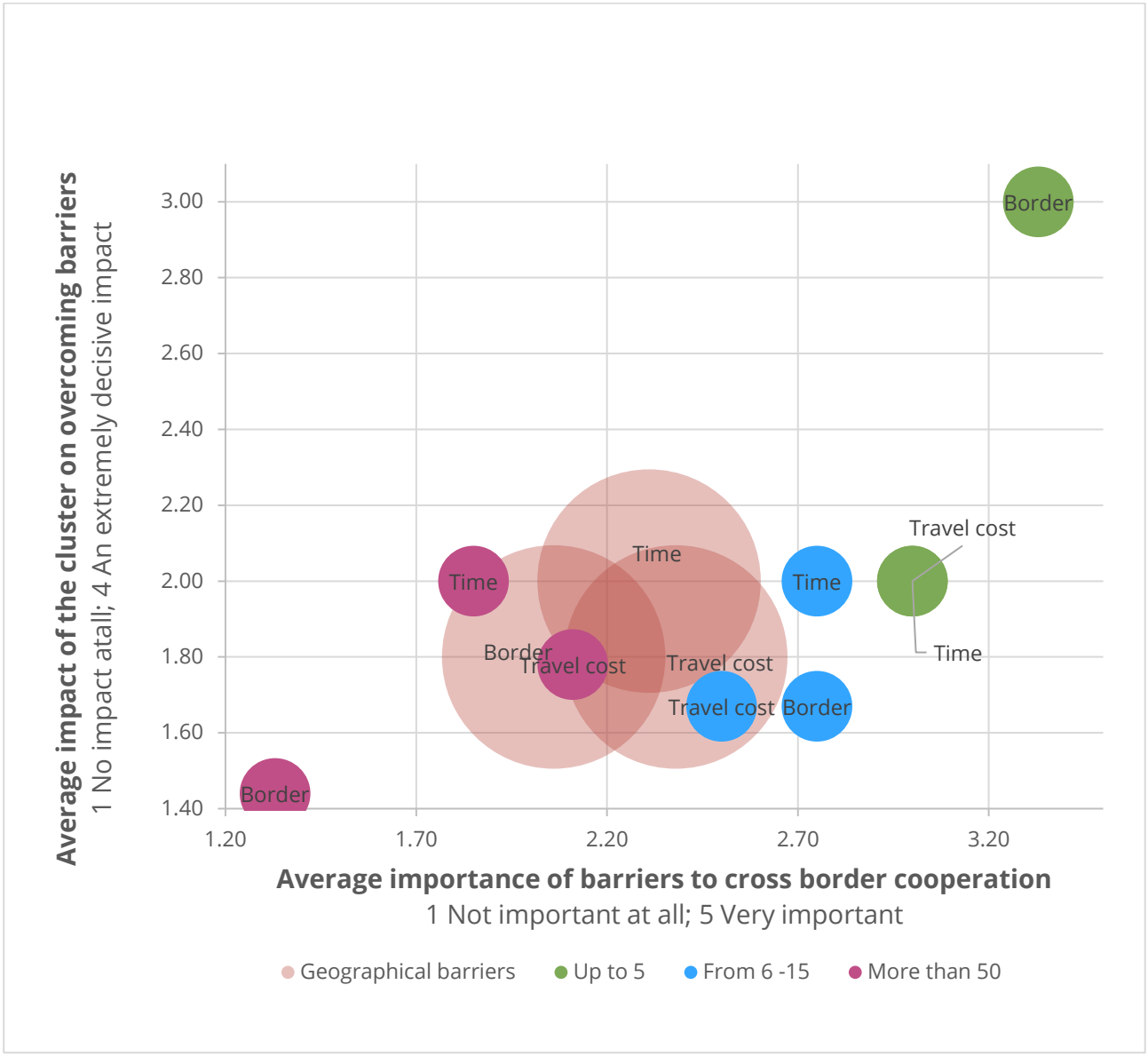
2.2.2. Geographical barriers and the impact of cross-border clusters

Geographical proximity, which includes aspects such as physical distance and other cost and time dimensions linked to cross-border collaboration, is important for fostering knowledge exchanges for innovation and therefore, for CBC innovation (Makkonenet and Williams, 2017; Knoben and Oelermans, 2006). Porter emphasised the significance of spatial proximity in innovation by arguing that spatial proximity is a competitive advantage: 'competitive advantage is created and sustained through a highly localised process' (Porter 1990: 19). Thus, theories of territorial innovation (innovative milieu, industrial districts, innovation clusters, regional innovation systems, etc.) emerge where the dynamics of local institutions and spatial proximity play a major role (Moulaert and Sekia, 2003).

Figure 2.5 shows the results on geographical barriers reported by the participating organisations according to the cluster they belong to and the size of the organisation. ADDITIVALLEY organisations attached the least importance to geographical barriers. The BigDatia organisations identified travel time as one of the main barriers to cooperation, as did INNOVMEDICA Alliance organisations, which also mentioned the cost of travel as another barrier for the cluster as a whole. The analysis by organisation size shows that organisations that employed fewer than 5 people, followed by those which employed 6-15 people, identified these barriers to a greater extent than those organisations of other sizes. The small organisations stressed the difficulties posed by border formalities (which include, among others, formal administrative processes for moving around, buying and selling, and other types of interaction due to the existence of the border), and the contribution that the cluster makes to overcoming these challenges.

Figure 2.5 Geographical barriers by cluster and organisation size





Notes: Time: travel times / Border: border and customs formalities
Source: Questionnaire developed by the authors

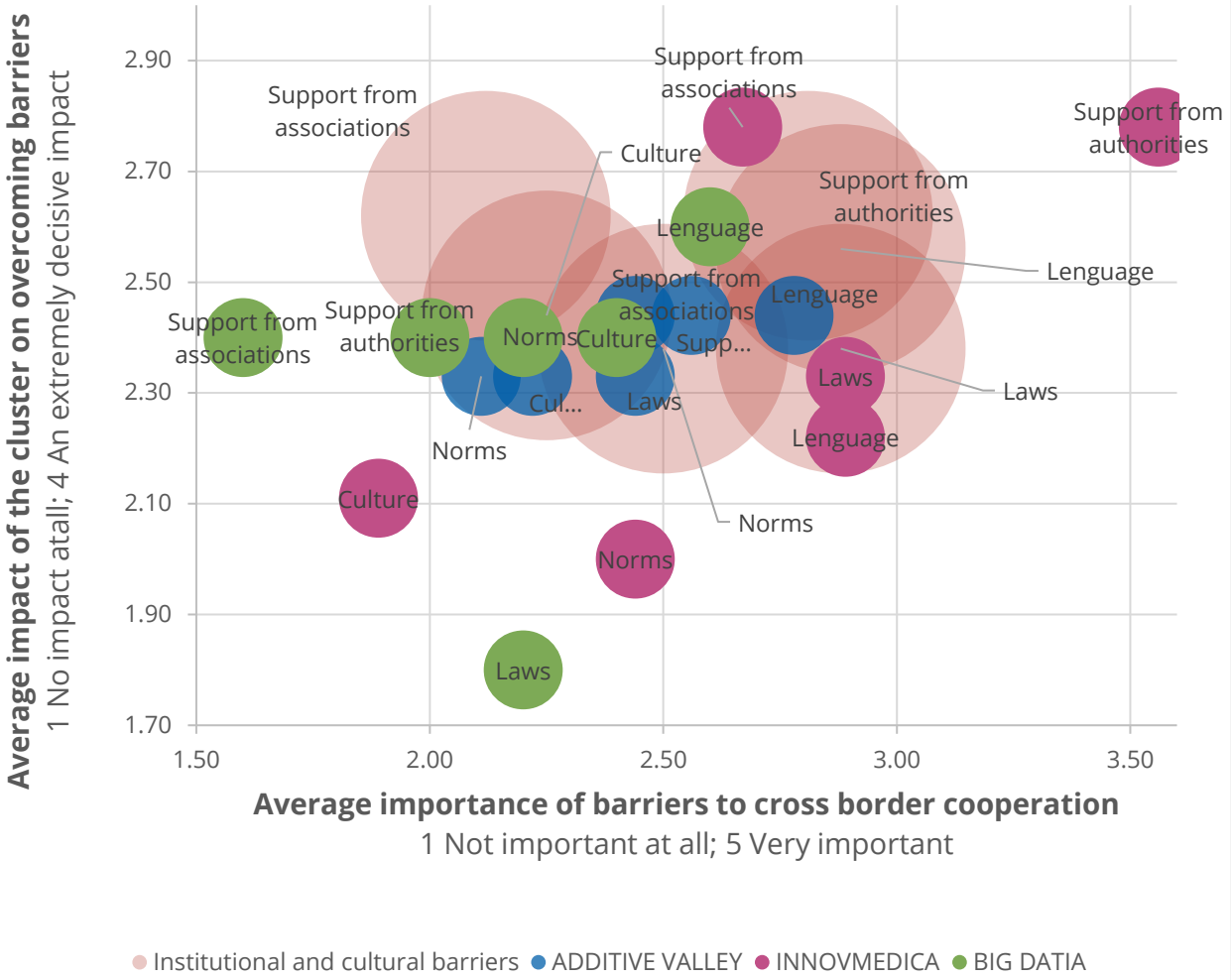
2.2.3. Institutional and cultural barriers and the impact of cross-border clusters

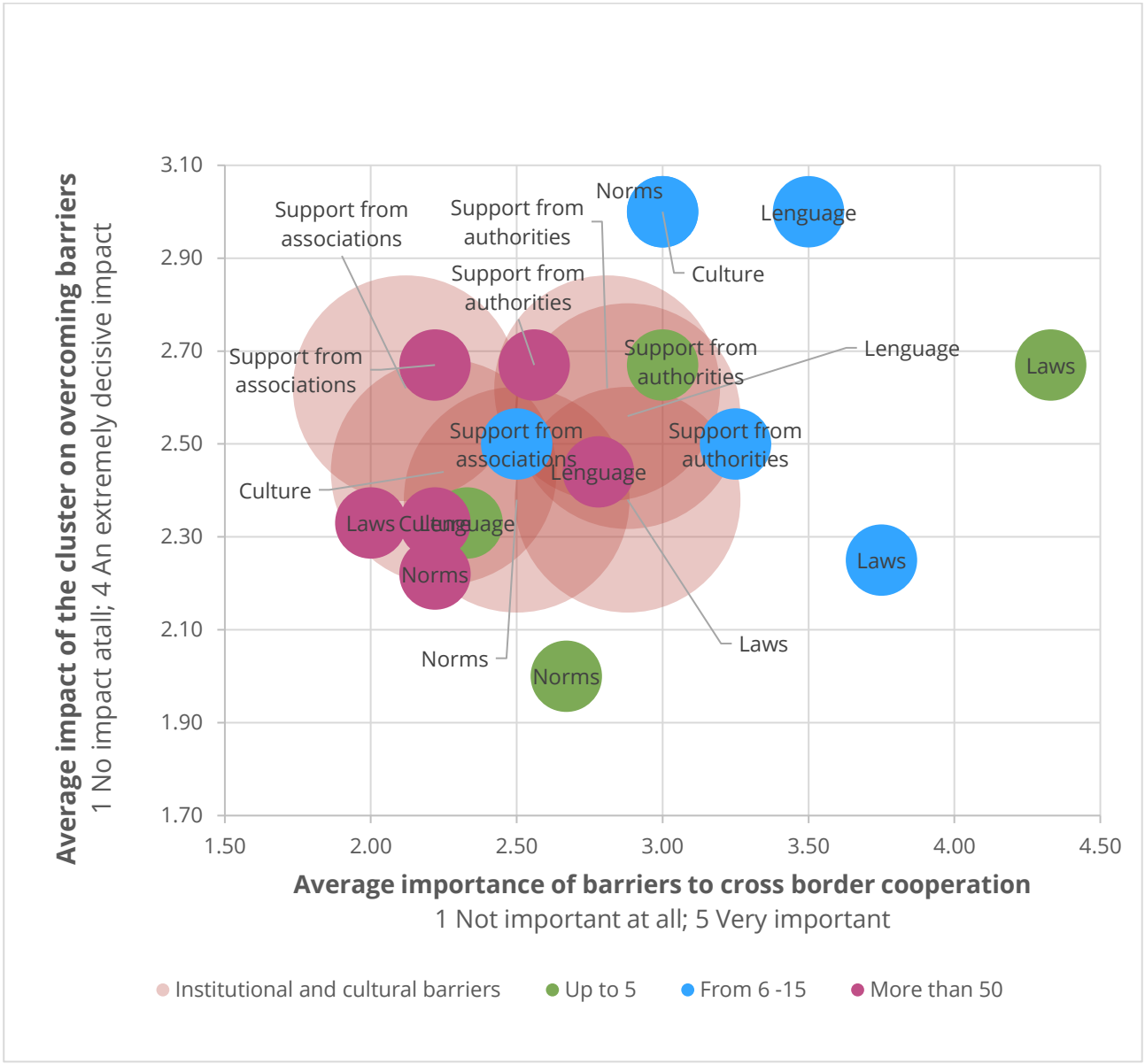
Institutional and cultural barriers refer to the existence of laws, regulations, CBC support institutions, differences in language, business culture, and norms and values that play a role in the development of CBC for innovation (Makkonen et al, 2013). Figure 2.6shows that, by cluster, the INNOVMEDICA Alliance organisations identified the greatest barriers related to the lack of support from local and regional institutions for CBC and the fact that laws and regulations were very different compared to the rest of the clusters. Along the same lines, the role of the clusters was perceived by the INNOVMEDICA Alliance organisations as being more decisive than by the

rest of the clusters, especially in terms of helping regional and local entities and associations to support CBC.

It was mainly the organisations that employed between 6-15 people that identified these barriers as being important in comparison with the rest of the groups of organisations by size, and where the clusters have had a greater impact, especially in overcoming the challenges that the differences that language norms and values pose to CBC.

Figure 2.6 Institutional and cultural barriers by cluster and organisation size





Notes: Laws: laws and regulations / Support from authorities: support from local and regional authorities / Support from associations: support from local business associations (chambers, clusters, agencies, etc.) / Language: language differences / Culture: differences in business culture / Norms: differences in norms, values and customs

Source: Questionnaire developed by the authors

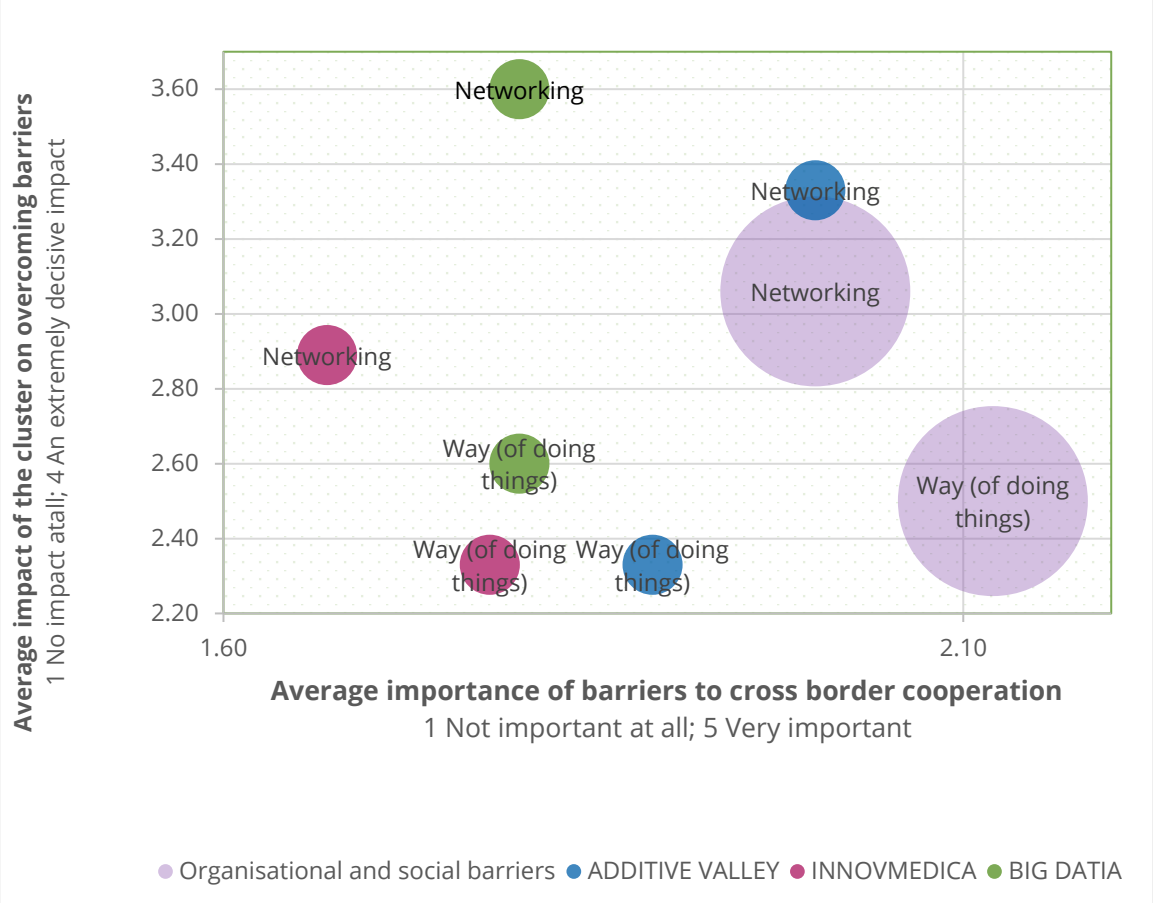
2.2.4. Organisational and social barriers and the impact of cross-border clusters

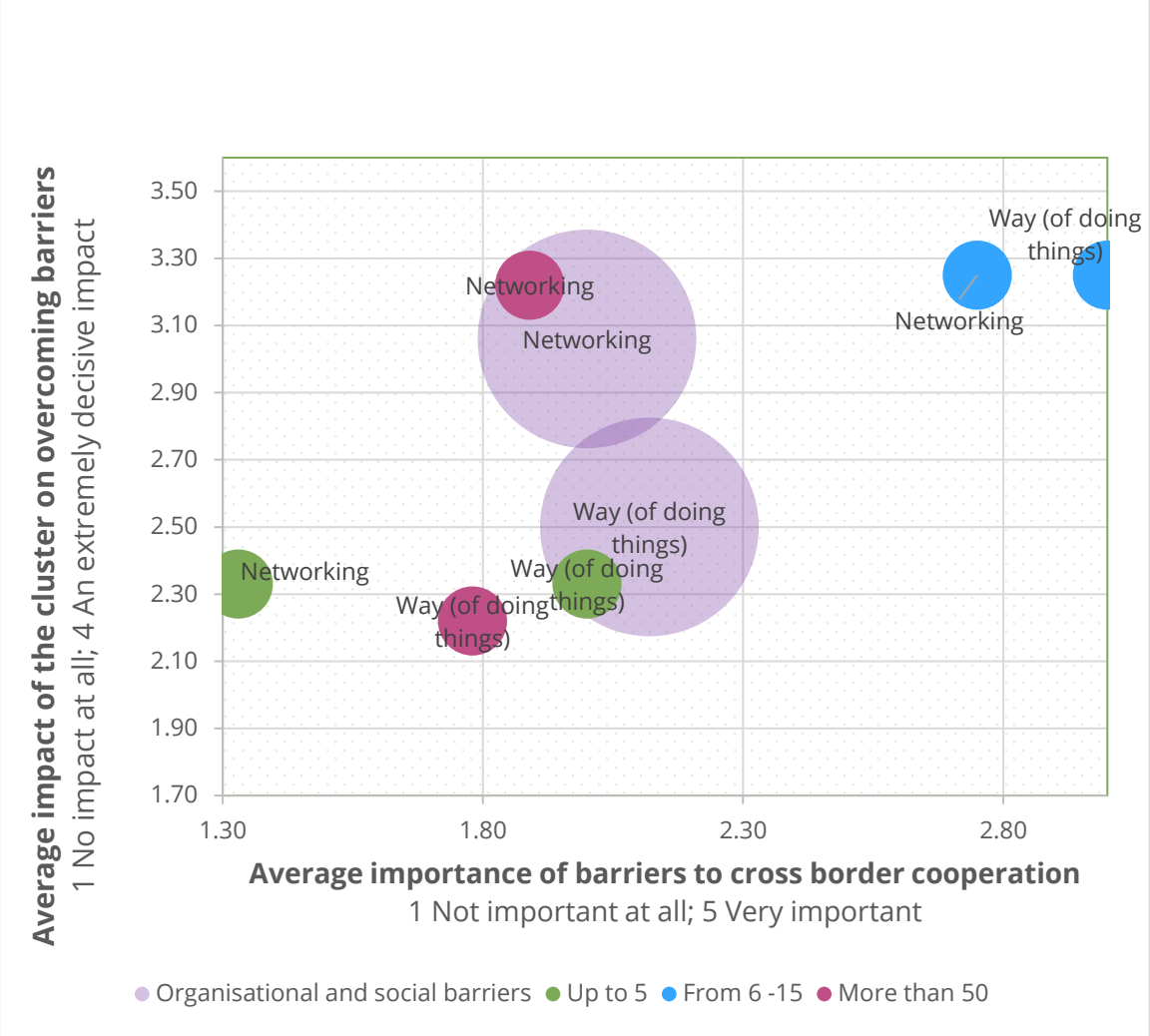
Inter-organisational collaboration is more efficient and achieves better results when the organisational context of the collaborating organisations has similarities that are conducive to

mutual understanding. This is how Knoben and Oelerman (2006) defined organisational proximity, which, due to its similarities to social proximity, is grouped in the same group of barriers in the literature. Social proximity refers to aspects that have to do with the personal dimension that affects collaboration, such as trust or networking (Makkonen and Williams, 2017) and greater social proximity also facilitates cooperation (Boschma, 2005).

Figure 2.7 summarises the results of the organisational survey by cluster and by organisation size. The cluster perspective shows that the ADDITIVALLEY organisations identified the greatest differences related to the organisational context and way of doing things and social networking as factors that impeded CBC, in contrast to the low importance given by the rest of the organisations in the BigDatia and INNOVMEDICA Alliance clusters. The organisations that employed between 6 and 15 employees identified these differences as important when cooperating with organisations in neighbouring regions. Likewise, participation in the clusters had a decisive impact on reducing the distances between the organisations to cooperate or are part of a network, especially for the organisations included in Big Datia and ADDITIVALLEY. Participating in a cluster also had a high impact on reducing the differences in networking for organisations of all sizes, but it was the organisations who employed between 6-15 persons that attached the most importance to these differences.

Figure 2.7 Organisational and social barriers by cluster and organisation size





Notes: Way: the organisational context and the way of doing things / Networking: the role and forms of social networking
Source: Questionnaire developed by the authors

2.2.5. Technological and cognitive barriers and the impact of cross-border clusters

Studies such as that by Cappellano et al. (2021) have focused on exploring cognitive proximity and its influence on cross-border dynamics. They analysed the degree of similarity between knowledge bases (through academic articles) and experience (the analysis of employment by industry) between regions and studied the case in the US-Canadian cross-border region of Cascadia. Contrary to the findings by Lundquist and Trippl (2013), Cappellano et al. concluded that high levels of cognitive proximity are not reflected in high levels of cross-border economic interaction.

In the case of the Klusteuro clusters, as can be seen in Figure 2.4, the organisations perceived cognitive proximity to be unimportant for cross-border cooperation between organisations in neighbouring regions, and perceived the impact of the cluster's contribution as a means of overcoming this cognitive distance. However, Makonnen et al. (2018) argued that basic

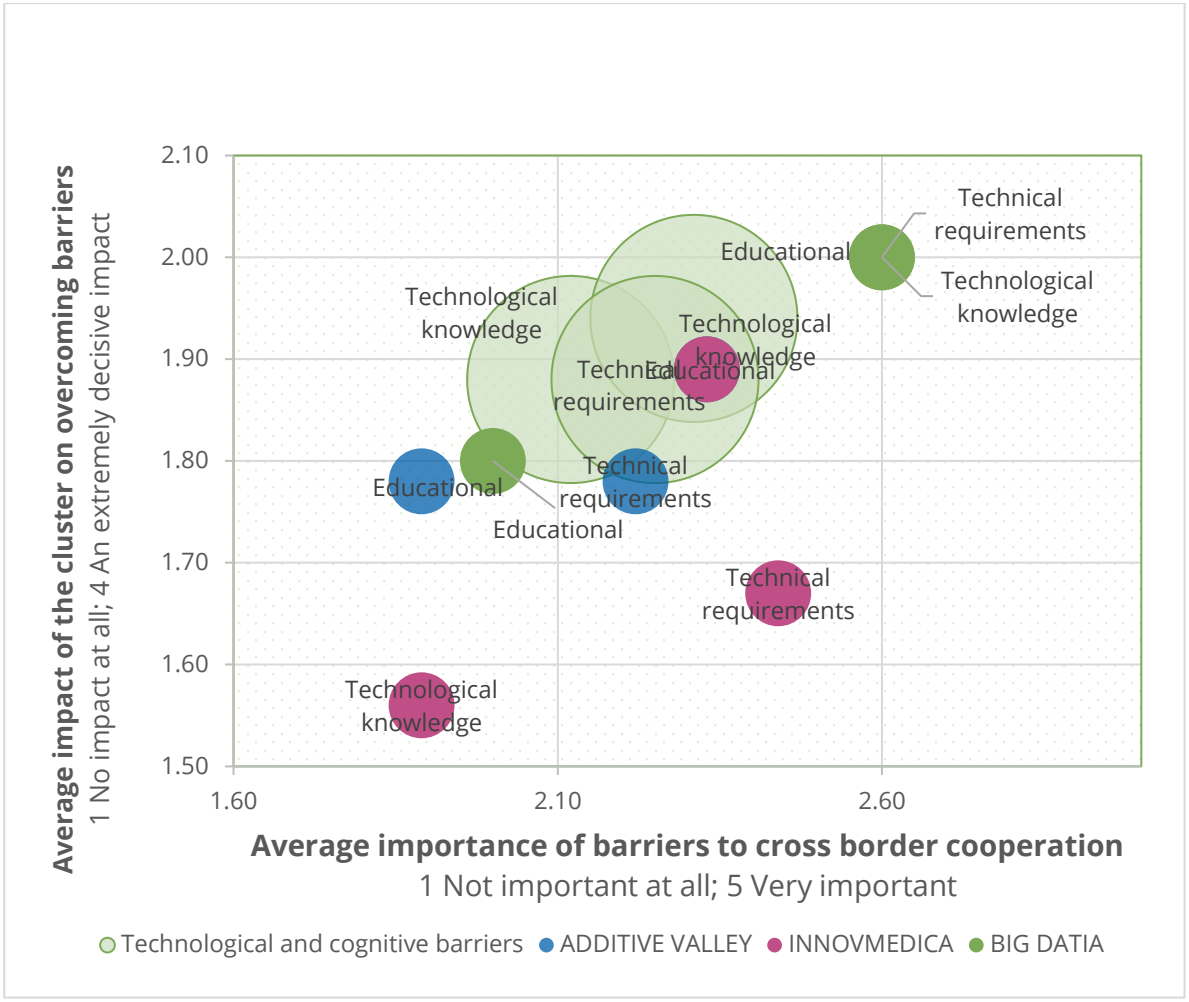
similarities in knowledge bases and technology and economic structures are necessary to create a platform to develop joint innovations.

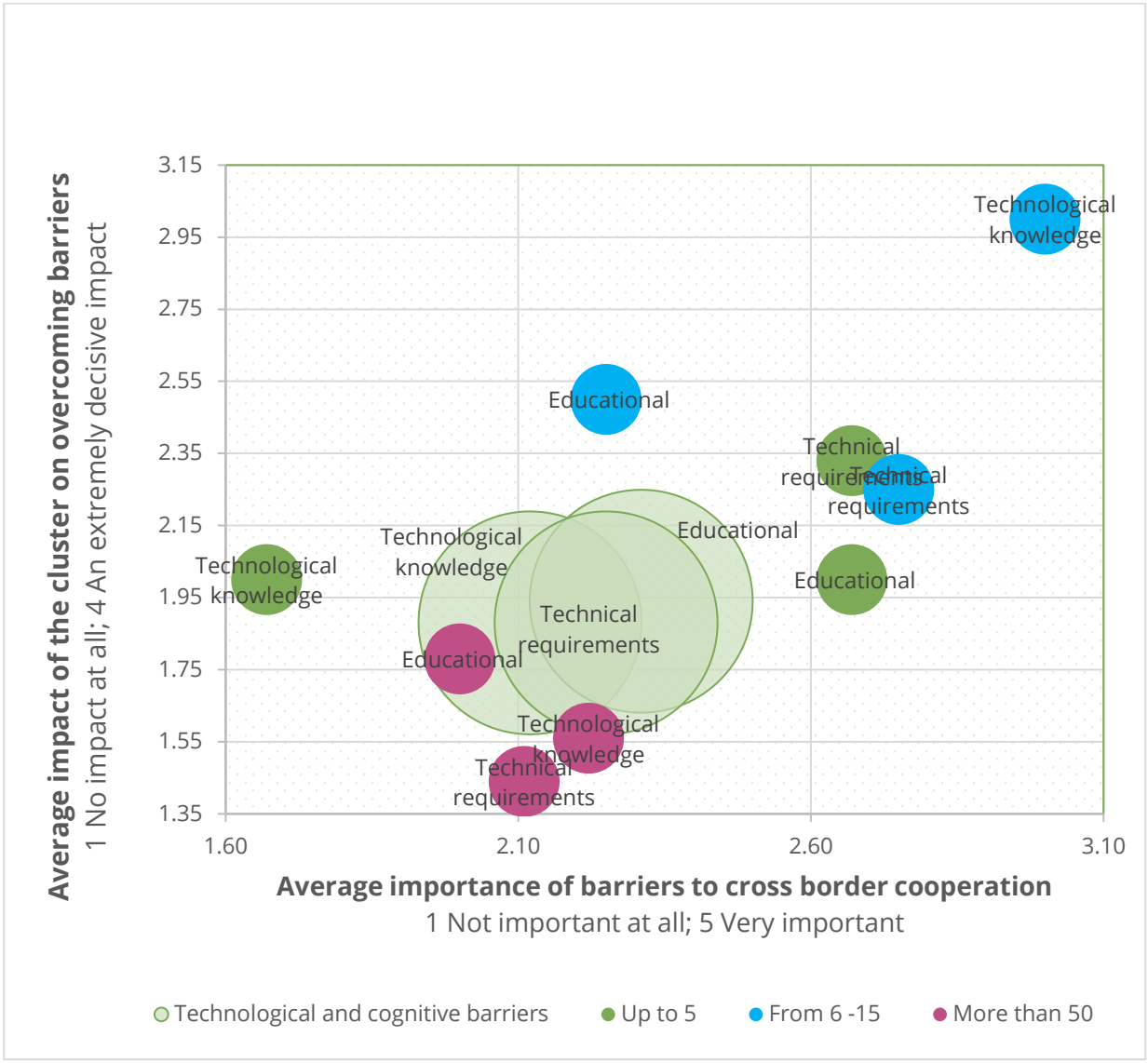
Figure 2.8 shows the differences according to the size and cluster membership of the Klusteuro organisations. Educational and technological differences for CBC were more important for BigDatia organisations than for those in the other clusters. In particular, differences in technological requirements (e.g. software, tools, etc. ....) and technological knowledge between territories influenced CBC for these organisations. INNOVMEDICA Alliance organisations also identified educational background and technological requirements as differences that inhibit CBC. ADDITIVALLEY organisations seemed to be less concerned about the importance of these barriers to cooperation.

In terms of size, it was the smallest organisations (less than 5 employees) that experienced the greatest difficulties associated with this type of distance to cooperate. As can be seen, it was the companies with 6 to 15 employees that identified a greater distance with neighbouring organisations regarding the differences in knowledge base in each territory.

In light of the data provided by the Klusteuro organisations, in order to strengthen cooperation in R&D, it would therefore be necessary to work on lowering institutional and social barriers as well as cognitive and technological barriers. And it is precisely in institutional barriers that the organisations in the clusters perceived a greater distance.

Figure 2.8 Technological and cognitive barriers by cluster and organisational size





Notes: Tech. knowledge: technological knowledge / Ed. background: educational background / Tech. requirements: technological requirements. For example: software, instruments, etc.
Source: Questionnaire developed by the authors

2.3. Barriers and opportunities for innovation through participation in cross-border clusters

Networking and collaboration with external stakeholders are considered essential factors for innovation (Chesbrough, 2003, Powell et al., 1996). Knowledge and information are distributed among a wide range of stakeholders in the economy and new knowledge is constantly being generated. Therefore, businesses cannot only rely on internal knowledge and internal processes for innovation. Collaboration with various types of partners is a crucial avenue for new innovation.

In order to analyse the barriers and opportunities for innovation in the NAEN case, we took the different types of innovation listed in the Oslo Manual (2018 revision) as a reference. The Manual considers innovation to be: 'a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or put into use by the unit (process)' (OECD, 2018, p. 20).

This definition has been developed and operationalised to provide the basis for practical guidelines. Although the concept of innovation is inherently subjective, its application is made fairly objective and comparable through the application of common benchmarks, which require a significant difference to be appreciated. This facilitates the collection and reporting of comparable data on innovation and innovation-related activities for firms in different countries and sectors and for firms of different sizes and structures, from small single-product businesses to large multinational companies producing a wide range of goods or services.

Table 2.2 below includes the taxonomy of innovation set out in the Manual, which served as a guide for the approach to innovation taken in the questionnaire.

Table 2.2 Types of innovation

Type of innovation	Subcategories
Product or service innovation	Goods are physical, produced objects for which a demand exists, over which ownership rights can be established and whose ownership can be transferred from one institutional unit to another by engaging in transactions on markets. Services are the result of a production activity that changes the conditions of the consuming units, or facilitates the exchange of products or financial assets. They cannot be traded separately from their production By the time their production is completed, they must have been provided to their users. Both include their design.
Organisational innovation	Business process (administration and management) that includes activities that can involve innovation in production methods, innovation in distribution methods and commercial innovation.
Business model innovation	Business model innovation relates to changes in a firm's core business processes as well as in the main products that it sells, currently or in the future. It may involve aspects such as new business practices for organising procedures, new working methods and new methods of external relations.
Marketing innovation	It includes market research and market testing, methods for pricing, product placement and product promotion; product advertising, the promotion of products at trade fairs or exhibitions and the development of marketing strategies. They also include advertising for trademarks that are not directly related to a specific product, such as advertising linked to the firm's name, as well as public relations activities that contribute to a firm's reputation and brand equity.

Source: OECD 2018

The questionnaire administered to the organisations in the Klusteuro clusters firstly reflects their views on the importance of collaboration in these four areas of innovation and, secondly, on the opportunity that participating in the clusters has given them for these innovations.

The results are presented below, firstly in general, and then analysed for each of the four types of innovation, according to which cluster the participating organisations in the questionnaire belong to and their size.

2.3.1. The importance of types of innovation and the impact of participation in cross-border clusters

As in the case of barriers to cross-border cooperation, Figure 2.9 summarises the results of the survey of the organisations that were part of the cross-border clusters. It ranks each type of innovation in terms of the intensity of the type of innovation developed by the organisations prior to their participation in the cross-border clusters (1 being 'no impact at all'; and, 4 'an extremely decisive impact'); and, the importance attached to the development of each type of innovation in the cluster (1 being 'not important at all'; and, 5 being 'very important').

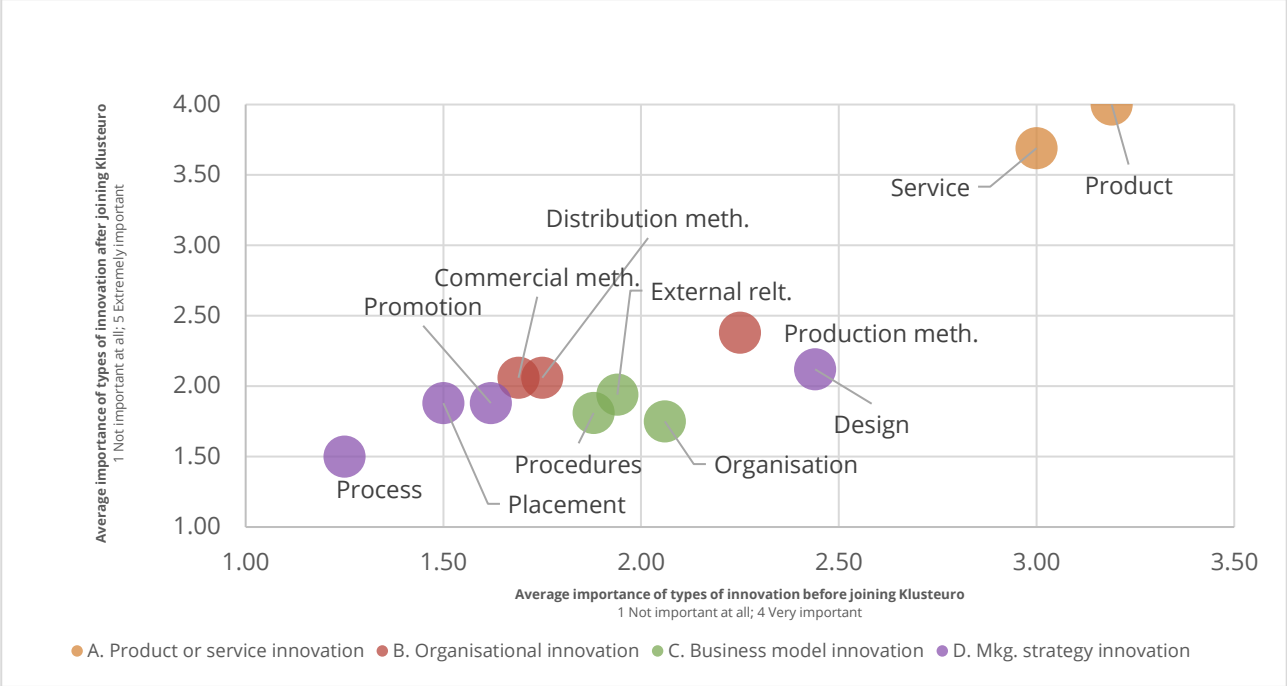
Most studies that focus on factors affecting firms' perceptions of the importance of barriers to innovation have shown that the greater the firm's involvement in R&D and other innovation activities, the greater the importance attached to obstacles to innovation (Mohnen and Rosa 2001; Iammarino et al. 2009; D'Este et al. 2012). All these studies have found that the more firms innovate, the more barriers to innovation they encounter, and consequently the more familiar they are with their implications.

In general, the organisations surveyed innovated much more in products and services than in the other types of innovation prior to joining the consortium. This was measured by using a scale of 1 to 5 (ranging from 'not important at all' to 'very important'). On a secondary level, the organisations innovated with a medium intensity in product design and innovation in production methods (a type of organisational innovation).

The rest of the innovations, such as organisational innovation, business model innovation, and marketing strategy innovation were not common in the surveyed organisations before they joined the different cross-border clusters. However, they were identified as a type of innovation that is desirable to develop in the cluster, as can be seen in the figure, where the importance given to them in the cluster increased without moving beyond the intermediate scores. In other words, a motivation for these organisations to participate in cross-border clusters is the opportunity to out (in addition to the type of product and service innovation) other types of innovation that are not usual for these organisations.

Nevertheless, in the case of product and service innovation, participation in cross-border clusters means that the organisations that took part in the survey attached high importance mainly to product innovation, followed by service innovation.

Figure 2.9 Average importance and impact of consortia on barriers to innovation



Notes: Product or service innovation, Organisational innovation: production method, distribution and commercial method; Business model innovation: new business practices to organise procedures, new methods of work organisation and decision making and new methods of organising external relations; Mkg. strategy innovation: innovation in product design, innovation in commercial methods of product placement, innovation in commercial methods of product promotion and pricing innovations.
Source: Questionnaire developed by the authors

The following sections outline the individual analysis of the different types of innovation that were common before the organisations joined the cluster and their change of perception after participation, taking into account the cross-border cluster to which the surveyed organisations belong, as well as the size of the organisations.

2.3.2. Product and service innovation and the impact of cross-border clusters

Figure 2.10 shows the results related to product and service innovation, according to the cross-border cluster to which they belong and their size. All organisations, irrespective of the cluster to which they belong, mainly worked on product and service innovation before joining the clusters, and it is this type of innovation that they largely wanted to develop in Klusteuro.

The case of INNOVMEDICA Alliance stands out, as this is where participation in the cluster was associated to a greater extent with the opportunity for product innovation. For the members of Big Datia and ADDITIVALLEY, participation in Klusteuro was associated with the development of the type of innovation that they were already engaged in, both in terms of goods and services.

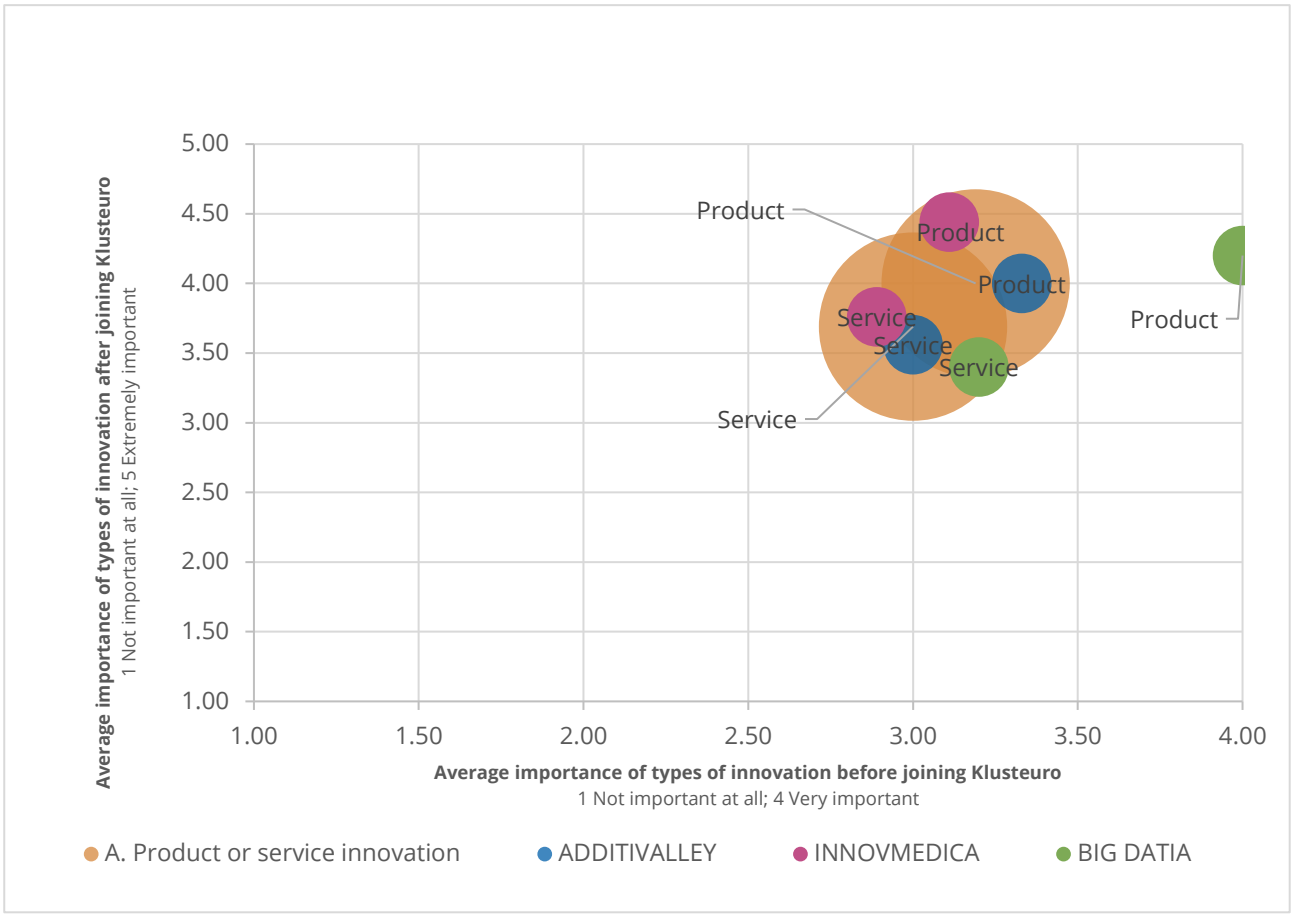
In an increasingly global and competitive business environment, businesses have recognised the need to invest in new product development in order to survive and gain competitive advantage (González-Zapatero et al., 2016). However, it is argued that new product development is a costly and resource-intensive process associated with high risk (Liang et al., 2014; Luzzini et al., 2015; Stock, 2014; Yan and Dooley, 2014 in Najafi-Tavani et al., 2016).

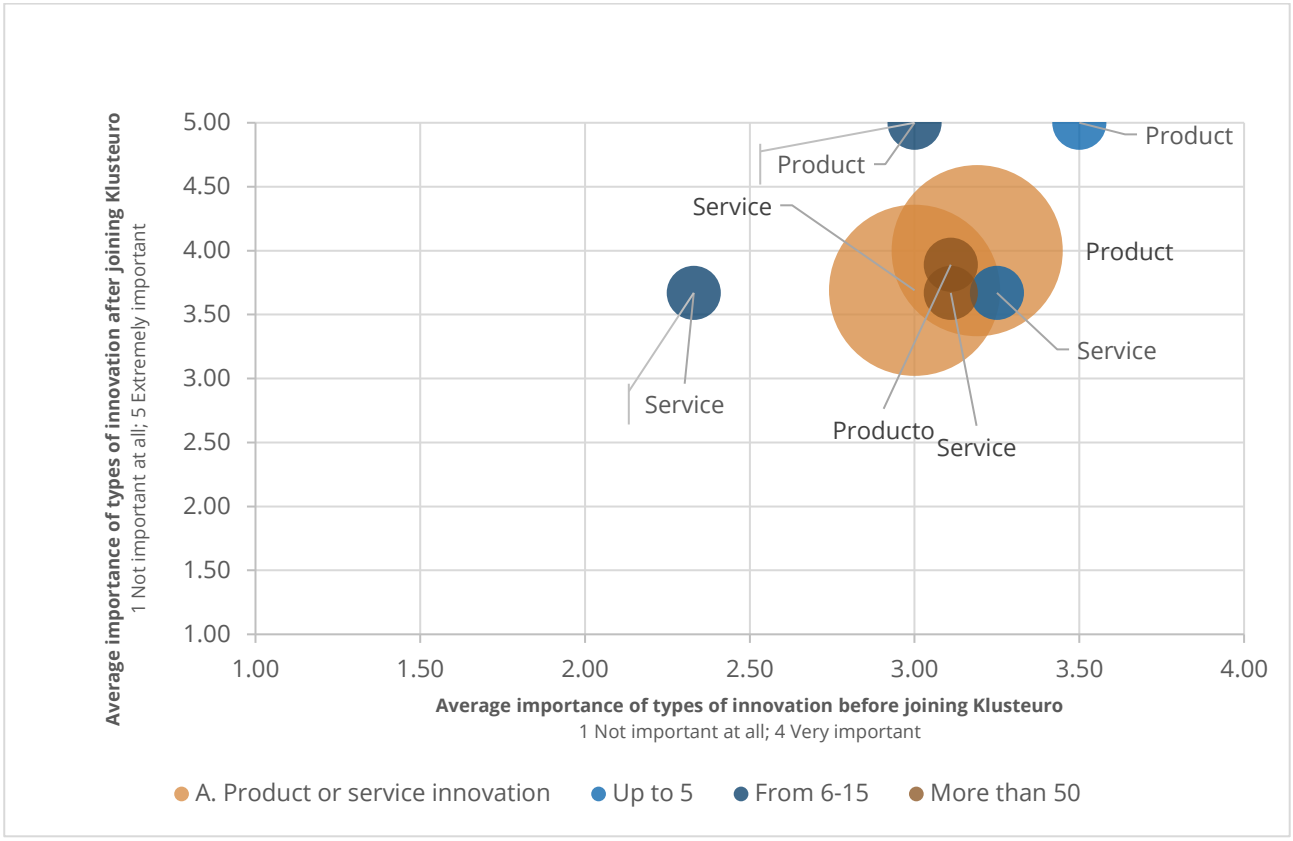
Collaboration with different external stakeholders enhances both knowledge sharing and the acquisition of market knowledge by firms, resulting in the expansion of their existing knowledge base, which in turn leads to an advancement in their innovation capacity (Clauss and Kesting, 2017; Luzzini et al., 2015). This collaboration has been identified in the literature as one of the most important external predictors of R&D&I performance (Najafi-Tavani et al., 2016).

An extensive body of literature has investigated the impact of different types of collaborative innovation networks on new product development (Clauss and Kesting, 2017; Faems et al., 2005; Heirati et al., 2016). However, there are still inconsistencies in the conclusions. For example, while some researchers (Luzzini, et al., 2015; Najafi-Tavani, et al., 2014; Nieto and Santamaria, 2007) have shown that collaborative innovation networks have a positive impact on the performance of new products, others have found negligible or even negative effects.

This analysis in relation to the size of the firm shows that membership of Klusteuro is, above all, an innovation opportunity for companies with less than 5 employees, as well as for those with a range of between 6 and 15 employees. Joining Kusteuro has been a great opportunity mainly for them to develop product innovation, but it has also had a positive impact on service innovation. For businesses with more than 50 employees, becoming a member is expected to involve the development of both innovation types, but to a lesser extent.

Figure 2.10 Product and service innovation, by cluster and organisation size





Note: The barrier results are illustrated by a series of larger bubbles
Source: Questionnaire developed by the authors

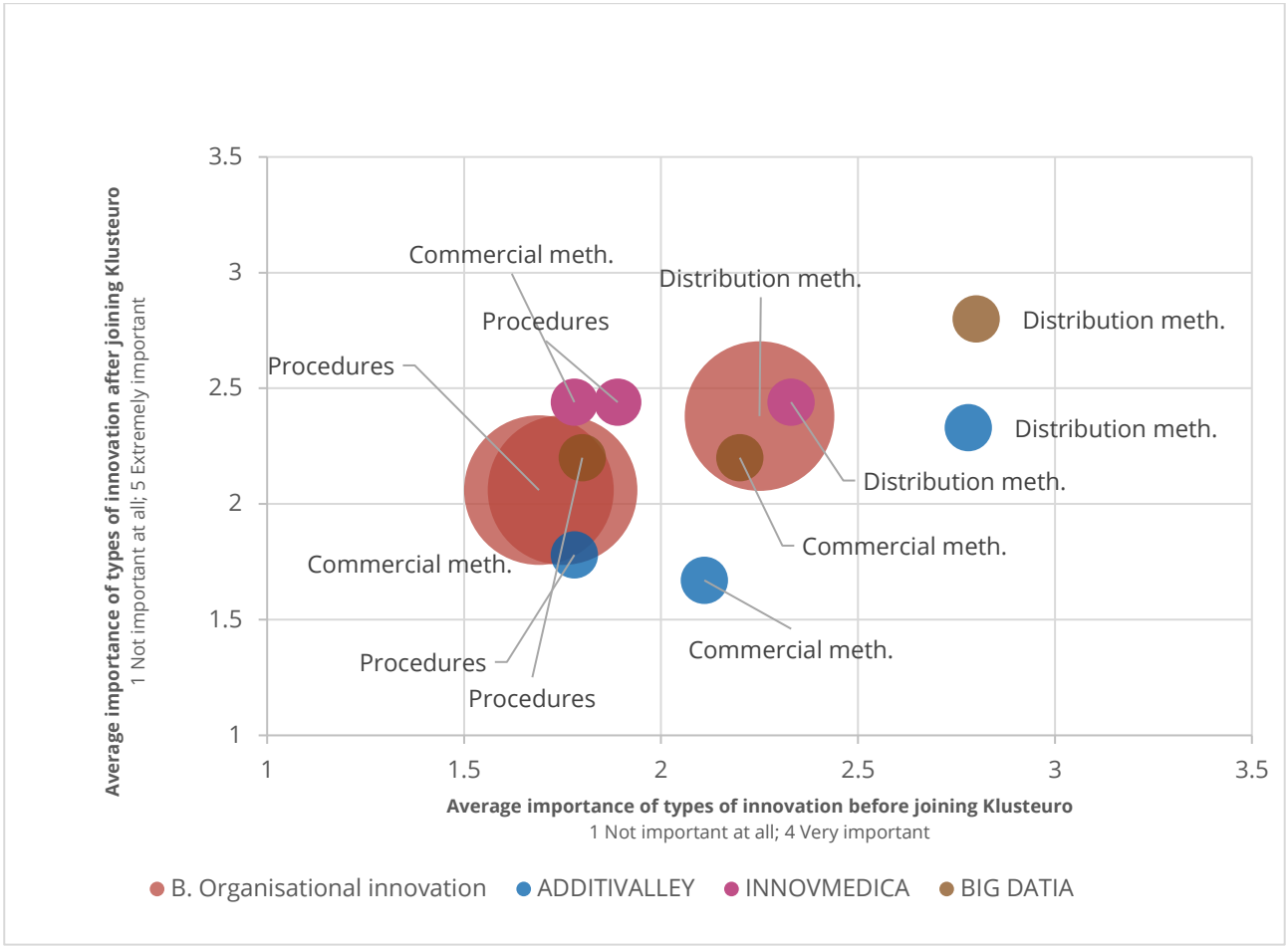
2.3.3. Impact of cross-border clusters on organisational innovation

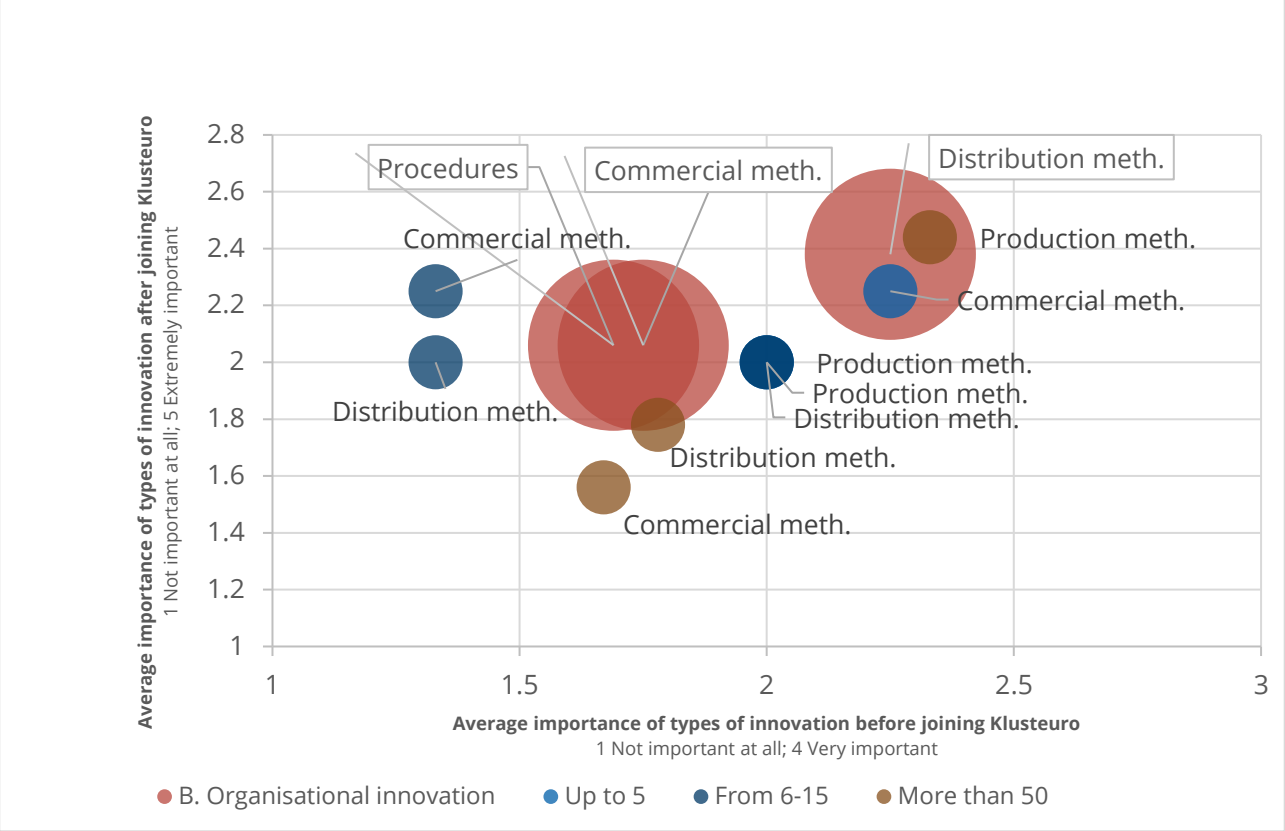
The analysis of the results obtained through the questionnaire shows that there was a low average level of organisational innovation in the surveyed organisations before joining Klusteuro. Klusteuro membership is linked to an increased importance of this type of innovation in the cluster and represents a discreet opportunity to advance the three aspects of this type of innovation: production method, distribution method and commercial aspects.

The same pattern could be seen in the analysis by size. In the case of organisations with more than 50 employees, a slight intentionality can be observed in the development of the business innovation sub-dimension.

Whether organisational or commercial, innovation in all its forms is essential for improving the production apparatus and strategies for penetrating new markets, as well as for achieving performance targets (Audretsch and Belitski 2020). The importance given to the development of this type of innovation by Klusteuro's member organisations, as shown in **Figure** 2.11 , goes beyond the type of innovation that these organisations engage in on a regular basis, thus providing an opportunity to promote innovation in Klusteuro.

Figure 2.11 Organisational innovation, by cluster and organisation size





Note: *Organisational innovation: production methods, distribution methods and commercial. innovation*
The barrier results are illustrated by a series of larger bubbles
Source: Questionnaire developed by the authors

2.3.4. Business model innovation and impact of cross-border clusters

Open innovation (Chesbrough, 2003), business model innovation, and the combination of the two (open business model innovation) has become increasingly important in achieving a competitive advantage in a globalised and interconnected economy. The literature suggests that business model innovation is triggered by internal or external factors (Alcalde and Guerrero, 2016).

Business model innovation involves some cost-raising effects and hidden risks specifically in an open innovation context. The latter stem from the need to find partners, which is especially challenging when an SME is changing its industrial focus (Marullo et al., 2020).

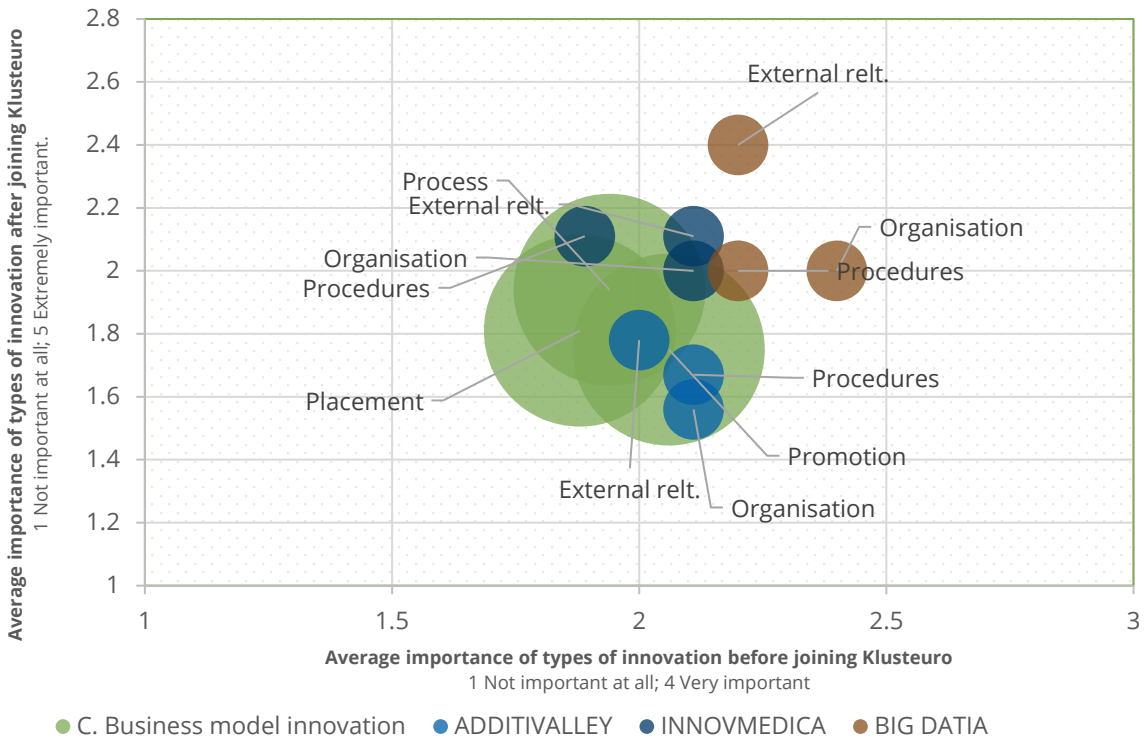
Other challenges relate to managing the external network, maintaining a balance between how close and how broad the collaboration is, and information asymmetries (Brunswicker and Vanhaverbeke, 2014). Too large a network of partners can dilute the competitive advantage for SMEs. In turn, the development of overly focused business models can limit the evolution of SMEs' core competences, keep SMEs focused on technology and proximity to partners, and increase the risk of becoming locked into available technological knowledge (Marullo et al., 2018).

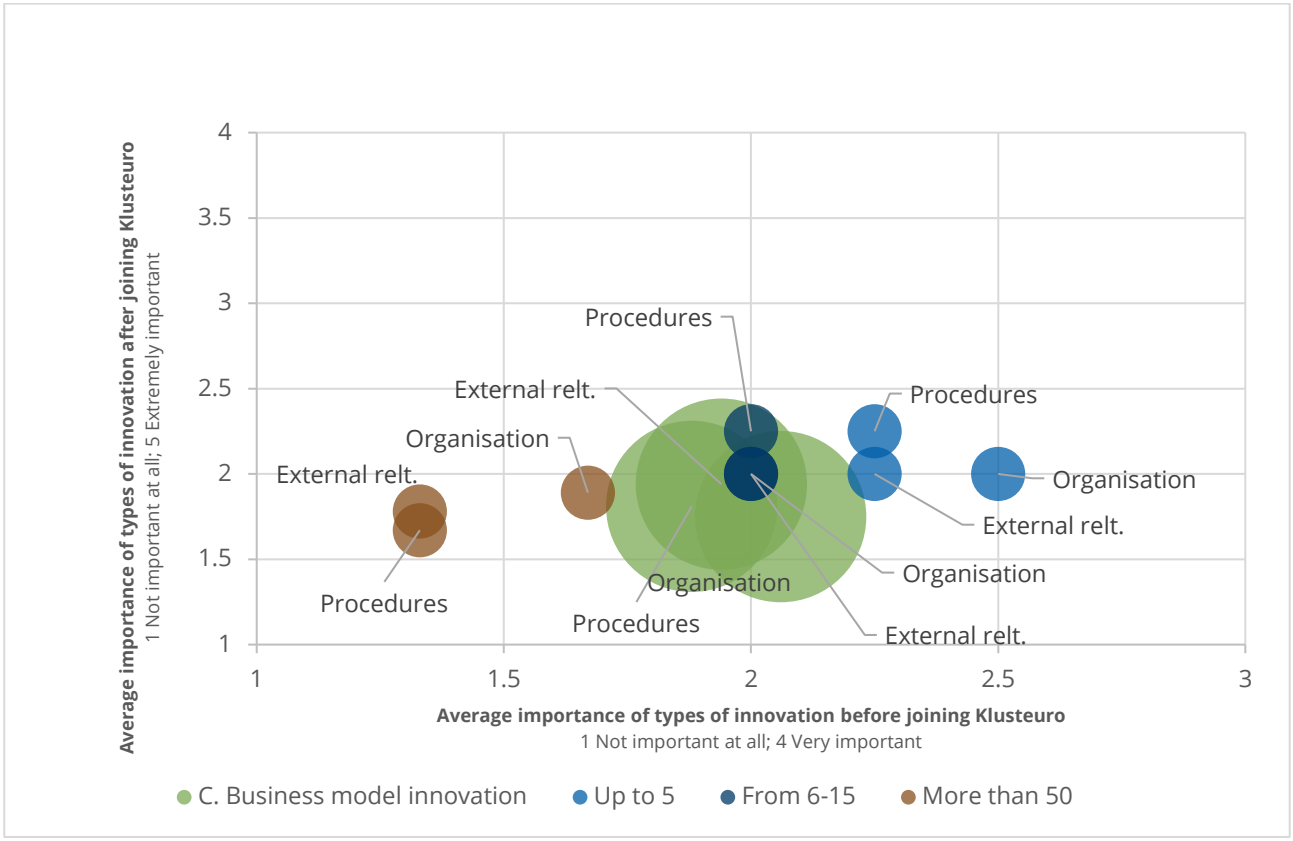
Regarding the business model of the NAEN case, as can be seen in **Figure** 2.12, the participants engaged in business model innovation to a lower intermediate level, and identified the importance of developing this innovation in the cluster as moderately important or unimportant. In other words, as described in previous paragraphs, despite the significance of this type of innovation for networking and achieving a competitive advantage in innovation, the Klusteuro member organisations did not identify this type of innovation as being something important to engage in within the cluster. In this sense, Klusteuro facilitating institutions could work on raising awareness of the importance of this type of innovation and its benefits.

In this scenario, it can be observed that the organisations belonging to the Big Datia cluster attached greater importance to business model innovation than the rest of the clusters.

Analysing the data according to the size of the participating organisations, those with the highest number of employees were the ones that considered the development of business model innovation in the cluster to be less important. However, for enterprises employing fewer than 5 people, this type of innovation in Klusteuro was of greater importance, which is a discreet opportunity in relation to the sub-dimension: new business practices to organise procedures.

Figure 2.12 Business model innovation by cluster and organisation size





Note. *Innovation new business models: new business practices for organising procedures, new methods of work organisation and decision making and new methods of organising external relations*
The barrier results are illustrated by a series of larger bubbles
Source: Questionnaire developed by the authors

2.3.5. The impact of cross-border clusters for innovation on marketing strategy

In a market economy, in addition to innovations in products and production processes, there are also innovations in the marketing of products. The development of new tools and methods in marketing strategy plays an important role in the evolution of industries (Chen 2006).

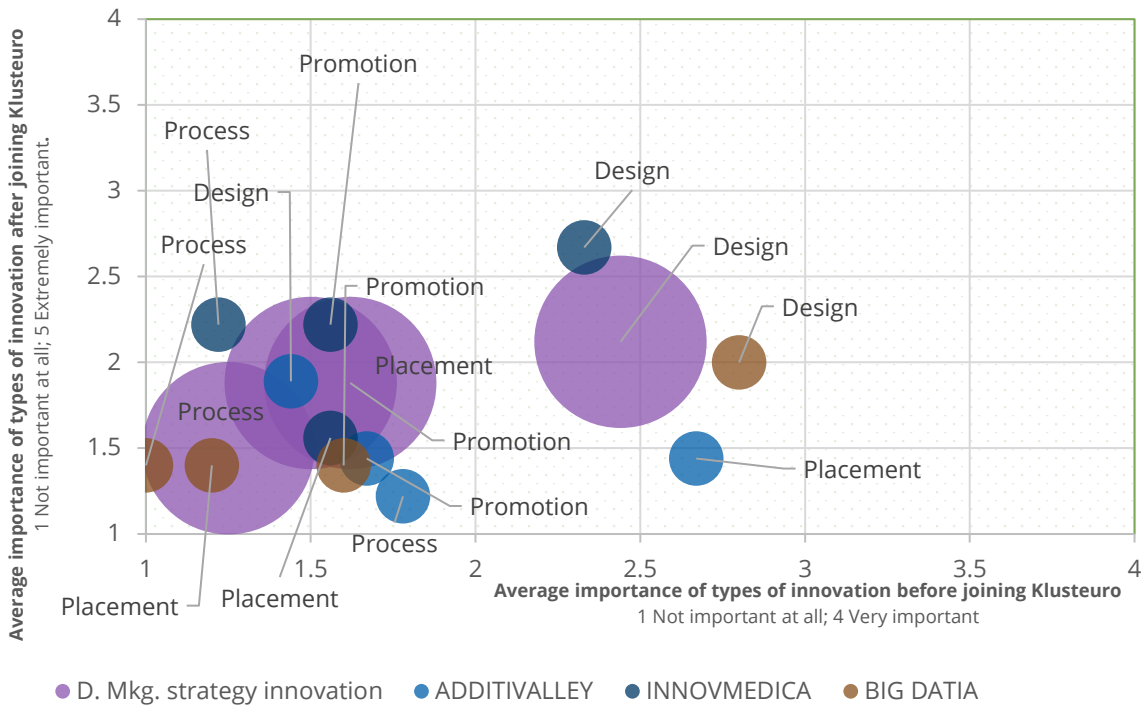
As with the other forms of innovation, the participating organisations did not engage in this innovation prior to joining Klusteuro, nor did they identify this innovation as being important to be developed in the clusters (see**Figure** 2.13). In other words, they did not expect the cluster to facilitate the development of this type of innovation.

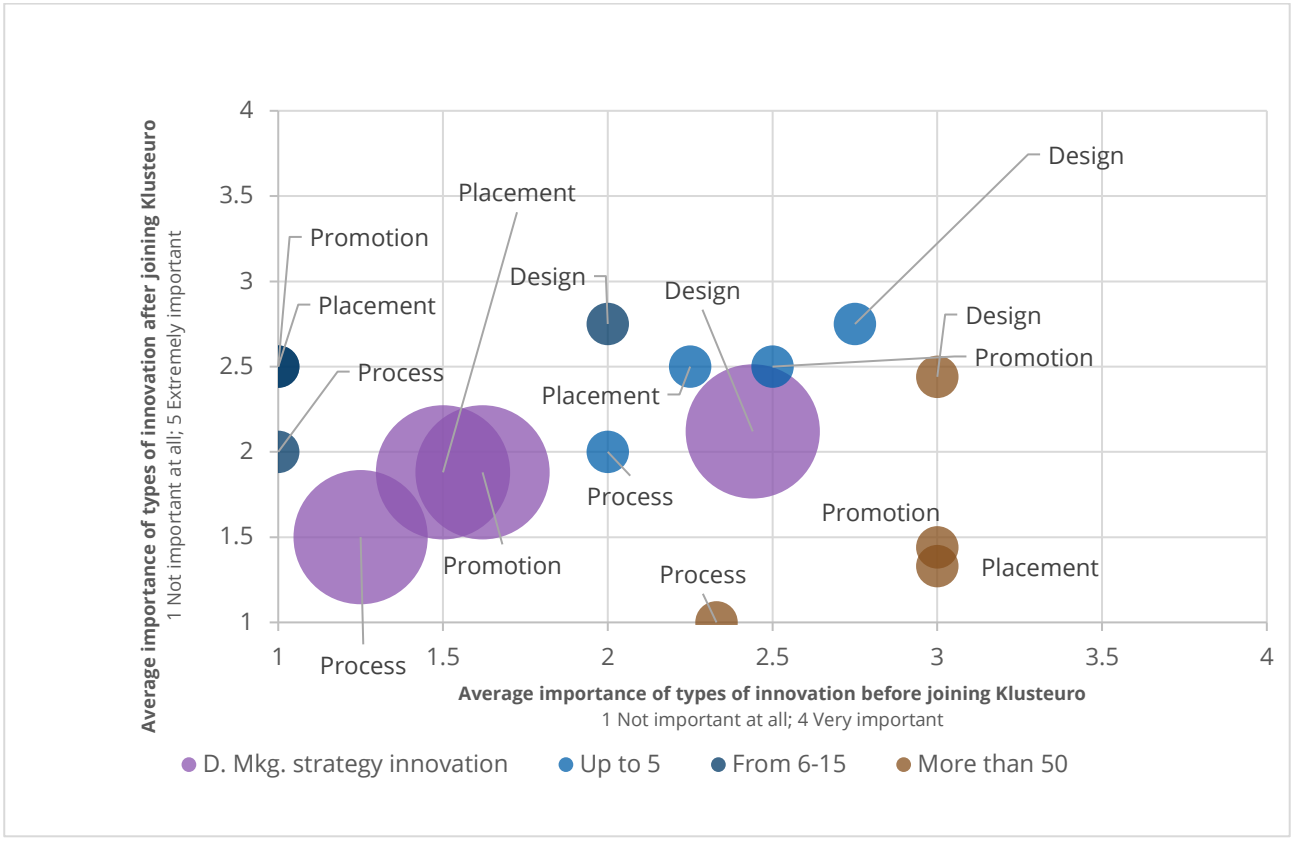
For the organisations in INNOVMEDICA Alliance and BigDatia, innovation in product design was moderately important prior to joining Klusteuro, although only the InnovMedica Alliance organisations considered this type of innovation in the cluster to be moderately important.

When analysed by organisation size, firms with between 6 and 15 employees considered innovation in marketing strategy to be of little importance, but after their participation in the cluster they attached greater importance to it. This is contrary to the behaviour of firms with

more than 50 people, which before participating in the cluster considered it to be important, but joining the cluster has not been an opportunity for them in this regard.

Figure 2.13 Innovation in marketing strategy by cluster and size of organisation





Note: Innovation in mkg. strategy: innovation in product design, innovation in commercial methods of product placement, innovation in commercial methods of product promotion and pricing innovations.
The barrier results are illustrated by a series of larger bubbles
Source: Questionnaire developed by the authors

3. Lessons to be learnt

The Klusteuro case study identified a number of different lessons of interest for public and private organisations that promote cross-border cooperation initiatives. These may be limited to a specific cross-border area, but are a starting point for future developments of cross-border clusters that seek to boost the capacity for cross-border cooperation, as well as the competitiveness of the territory through innovation.

Organisations facilitating cross-border clusters can base their activity on the diagnosis of the needs of their partner organisations in cross-border cooperation and innovation

The report shows the results where Klusteuro organisations have the greatest needs in terms of initiating mutual learning processes with other organisations in neighbouring regions, and what kind of innovation they expect to develop through their collaboration.

From the perspective of an institution facilitating cross-border cooperation (CBC), having a diagnosis of where the greatest needs are in terms of CBC and innovation, and knowing the expectations of the partner organisations regarding the desired contribution of the cluster can help to prioritise and focus its actions. A diagnosis of this type makes it possible to concentrate resources and actions on those aspects that are more important for the organisations and that generate greater efficiency and better CBC results.

Cross-border clusters foster understanding between organisations from different territories, helping to overcome barriers to cooperation

Being part of Klusteuro has a high average impact on solving institutional and cultural, organisational and social barriers to cross-border cooperation. Participating in cross-border clusters reduces barriers related to language, business culture, norms and values. Thus, cooperation is made possible by having an intermediary organisation that helps to reduce the existing differences between the members. In this scenario, the development of cross-border clusters brings organisations from different territories closer together, not only in aspects related to geographical proximity and how to overcome this, but also by bridging certain gaps in organisational, institutional and cultural, cognitive and social aspects that are fundamental for mutual learning and innovation processes, with different intensity depending on each case.

To foster business-to-business R&D in cross-border territories, it is necessary to work on reducing technological and cognitive barriers

Klusteuro seems not to be playing an important role in bringing the partners closer together in the mutual understanding of technical, technological, cognitive and educational knowledge. This can be seen from the survey results, where educational and technological differences are perceived as moderately important for cross-border cooperation, and the work of the cluster in this field is identified as moderately decisive. If cross-border cooperation is to be oriented towards R&D-intensive projects, it is necessary to work on reducing these barriers and to raise awareness among partner entities of the importance of bringing positions closer together in this field.

Participation in cross-border clusters has a greater impact on smaller firms and in the field of customised medical devices

Institutional barriers, that is, those barriers related to legislation, regulations and institutions supporting cross-border cooperation, are perceived by sectors such as additive manufacturing and big data as less important. In contrast, organisations from sectors related to customised medical devices consider it more important how participation in cross-border clusters can be a way of overcoming these barriers. One might ask why these organisations perceive these barriers to a greater extent than organisations in the additive manufacturing and big data. This pattern is also found among smaller firms, which attach greater value to participation in cross-border clusters in order to overcome not only institutional but also cultural barriers.

Networking is one of the most appealing features of cross-border clusters

Klusteuro member organisations, irrespective of their size, have a high regard for the fact that joining a cross-border cooperation initiative allows them to do networking and to cooperate with different organisations from neighbouring territories. However, the importance given to seeking to understand the role and ways of working differs according to the size of the organisation, as organisations with between 6 and 15 employees believe that there is a greater need to work in this area in order to improve CBC.

Participation in cross-border clusters is conducive to collaborative innovation

Prior to their participation in Klusteuro, the case study participants on average place a low level of importance on collaborative innovation. However, in relation to product and service innovation, participation in a cross-border cluster has a positive impact on this form of innovation.

Participation in the cluster and collaboration with other firms and organisations open a door to innovation that is of great interest for the organisations involved in the case study, mainly for product innovation. This is undoubtedly the most important aspect in relation to innovation, and offer up a window of opportunity for clusters' actions; notably, in terms of cooperation and improvement of business competitiveness for the creation of new products and services complementarily developed by firms and other organisations along the value chain.

While collaboration in organisational, business model and marketing strategy innovation is not detected as a priority, participation in a cross-border cluster brings added value in this regard, and it is therefore an area of work that clusters should maintain and strengthen.

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Annex 1. Questionnaire

BLOCK 1. CHARACTERISTICS OF THE FIRMS/INSTITUTIONS

Please provide the following information about your company (General Information)

1. Tax Id. Number (*CIF*)
2. Region(s) where your firm is located (may be located in several regions)
3. Select as appropriate.
    1) New Aquitaine
    2) Navarre
    3) Basque Country
4. Type of business
    1) Research association and other research institutions
    2) Public
    3) Private company with no foreign ownership
    4) Foreign-owned private company
5. Is it part of a corporate group?
    1) Yes
    2) No
6. Number of employees
    1) Up to 5
    2) 6-15
    3) 16-25
    4) 26-50
    5) More than 50
7. Turnover in 2020 (approximately):
8. From last year's turnover, please state the percentage (%) of the turnover that is accounted for by the company's main client/customer:
9. From last year's turnover, please state the percentage spent on R&D:
10. From last year's turnover, please state what percentage is accounted for by exports of good and/or services:
11. What is the company's main market?
    1) Basque Country
    2) Navarre
    3) New Aquitaine
    4) Rest of France
    5) Rest of Spain
    6) Rest of the EU
    7) Rest of the world
12. Participation in the cross-border Poleuro - Competitiv´eko consortia. Select as applicable.
    1) ADDITIVALLEY
    2) BIGDATIA
    3) InnovMedica ALLIANCE

13. Please state the year when you joined the consortium:

BLOCK 3. BARRIERS TO CROSS-BORDER COOPERATION AND INNOVATION BEFORE JOINING THE CROSS-BORDER CONSORTIA

14. Please rate how important Geographical Proximity was as a barrier before you joined the consortium, 1 being 'not important at all' and 5 being 'very important'. *
    1) Travel times are long
    2) Travel costs are expensive
    3) Border/customs formalities and restrictions are a problem
15. Please rate how important institutional and cultural barriers were in terms of cross-border collaboration before joining the cross-border consortium, 1 being 'not important at all' and 5 being 'very important'.
    1) Laws and regulations are very different
    2) Local and regional authorities do not support cooperation
    3) Local business associations (chambers, clusters, agencies, etc.) do not support cross-border cooperation
    4) Language differences are a problem
    5) Business culture is very different
    6) Norms, values and customs are very different
16. Please rate how important educational and technological differences were as barriers to cross-border cooperation before joining the consortium, 1 being 'not important at all' and 5 being 'very important'.
    1) Technological knowledge is very different
    2) Technological requirements are very different. For example, software, instruments, etc...
    3) Educational background is very different
17. Please rate how important organisational and social differences were as barriers to cross-border cooperation before joining the consortium, 1 being 'not important at all' and 5 being 'very important'.
    1) The organisational context and the way to do things are very different
    2) The role and ways of engaging in social networking are very different
18. Product or service innovation. Please state what type of innovation in collaboration you engaged in before joining the consortium and how important it was before joining the cross-border consortia, 1 being 'not important at all' and 4 being 'extremely decisive'.
    1) Product
    2) Service
19. Organisational innovation. Please state what type of innovation in collaboration you engaged in before joining the consortium and how important it was before joining the cross-border consortia, 1 being 'not important at all' and 4 being 'extremely decisive'.
    1) Innovation in production methods (manufacturing methods to produce goods and services)
    2) Innovation in distribution methods (logistics, distribution or delivery methods)
    3) Commercial innovation (activities to support processes, such as maintenance systems, purchasing transactions, computing, accounting)

20. Business model innovation. Please state what type of innovation in collaboration you engaged in before joining the consortium and how important it was before joining the cross-border consortia, 1 being 'not important at all' and 4 being 'extremely decisive'.
    1) New business practices to organise procedures (first use in the management of supply chains, knowledge management, etc.)
    2) New work organisation and decision-making methods (new responsibility systems, teamwork, decentralisation, etc.)
    3) New methods for organising external relations (first time in alliances, consortia, outsourcing, etc.)
21. Marketing strategy innovation. Please state what type of innovation in collaboration you engaged in before joining the consortium and how important it was before joining the cross-border consortia, 1 being 'not important at all' and 4 being 'extremely decisive'.
    1) Product design innovation
    2) Innovation in product placement methods
    3) Innovation in commercial methods for product promotion
    4) Pricing innovation
22. Please state the type of partner with which you cooperated before you joined the cross-border consortia. Select as appropriate (more than one can be selected if necessary).
    1) Businesses
        1) Companies outside your corporate group
        2) Other companies within your corporate group
        3) Universities and other higher education institutions
        4) Public authorities or public research institutes
        5) Public sector users or clients
        6) Non-profit organisations
    2) Within your region (New Aquitaine, Basque Country, Navarre)
    3) Within the cross-border area (New Aquitaine, Basque Country, Navarre)
    4) In the rest of your state (outside your region)
    5) In the rest of the world
23. Traditionally, what were the main barriers that hindered your organisation's innovation activities? Please rate how important these barriers were, 1 being 'not important at all' and 5 being 'very important'.
    1) Lack of funds in the company or corporate group
    2) Lack of funding from external sources
    3) Lack of qualified personnel
    4) Difficulties in obtaining government subsidies or financial support to innovation
    5) Difficulties in obtaining partners to cooperate in innovation
    6) Uncertainty about the demand for innovative goods and services
    7) Strong competition in our market
24. Please rate how important the main reasons that led you to join the cross-border consortia were, 1 being 'not important at all' and 5 being 'very important'
    1) Exchange of information
    2) Aligning activities to achieve efficient results
    3) Sharing resources to reach compatible objectives

4) Jointly work towards shared objectives

BLOCK 3. HOW PARTICIPATION IN THE CONSORTIA HAS CONTRIBUTED TO REDUCING THE BARRIERS TO CROSS-BORDER COOPERATION AND INNOVATION

25. To what extent has being part of the consortium helped you overcome the barrier of Geographical Proximity, 1 being 'not at all' and 4 being 'it has been extremely decisive'
    1) Travel times are long
    2) Travel costs are expensive
    3) Border/customs formalities and restrictions are a problem
26. To what extent has being part of the consortium helped you overcome the barrier of institutional and cultural differences, 1 being 'not at all' and 4 being 'it has been extremely decisive'?
    1) Laws and regulations are very different
    2) Local and regional authorities do not support cooperation
    3) Local business associations (chambers, clusters, agencies, etc.) do not support cross-border cooperation
    4) Language differences are a problem
    5) Business culture is very different
    6) Norms, values and customs are very different
27. To what extent has being part of the consortium helped you overcome the barrier of technological and educational differences, 1 being 'not at all' and 4 being 'it has been extremely decisive'?
    1) Technological knowledge is very different
    2) Technological requirements are very different. For example, software, instruments, etc...
    3) Educational background is very different
28. To what extent has being part of the consortium helped you overcome the barrier of organisational and social differences, 1 being 'not at all' and 4 being 'it has been extremely decisive'?
    1) The organisational context and the way to do things are very different
    2) The role and ways of engaging in social networking are very different
29. For your company, is belonging to the consortium an opportunity to develop in terms of innovation? If your answer is NO, please go to question 34.
    1) Yes
    2) No
30. How important do you think developing product and/or service innovation is in connection with your participation in the consortium?
    1) Product
    2) Service
31. How important do you think developing organisational innovation is in connection with your participation in the consortium, 1 being 'not important at all' and 5 being 'very important'?
    1) Innovation in production methods (manufacturing methods to produce goods and services)

2) Innovation in distribution methods (logistics, distribution or delivery methods)
3) Commercial innovation (activities to support processes, such as maintenance systems, purchasing transactions, computing, accounting)

32. How important do you think developing business model innovation is in connection with your participation in the consortium, 1 being 'not important at all' and 5 being 'very important'?
    1) New business practices to organise procedures (first use in the management of supply chains, knowledge management, etc.)
    2) New work organisation and decision-making methods (new responsibility systems, teamwork, decentralisation, etc.)
    3) New methods for organising external relations (first time in alliances, consortia, outsourcing, etc.)
33. How important do you think developing marketing strategy innovation is in connection with your participation in the consortium, 1 being 'not important at all' and 5 being 'very important'?
    1) Product design innovation
    2) Innovation in product placement methods
    3) Innovation in commercial methods for product promotion
    4) Pricing innovation
34. What type of stakeholders in the consortium are you interested in collaborating with? Select as appropriate (more than one can be selected if necessary).
    1) Businesses
        7) Companies outside your corporate group
        8) Other companies within your corporate group
        9) Universities and other higher education institutions
        10) Public authorities or public research institutes
        11) Public sector users or clients
        12) Non-profit organisations
    2) Within your region (New Aquitaine, Basque Country, Navarre)
    3) Within the cross-border area (New Aquitaine, Basque Country, Navarre)
    4) In the rest of your state (outside your region)
    5) In the rest of the world
35. To what extent has your participation in the consortia contributed to reducing the barriers to your organisation's innovative activities, 1 being 'not important at all' and 4 being 'extremely decisive'?
    1) Lack of funds in the company or corporate group
    2) Lack of funding from external sources
    3) Lack of qualified personnel
    4) Difficulties in obtaining government subsidies or financial support to innovation
    5) Difficulties in obtaining partners to cooperate in innovation
    6) Uncertainty about the demand for innovative goods and services
    7) Strong competition in our market

Many thanks for your participation.

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