

RETHINKING CLUSTERS

Place-based initiatives
for inclusive,
innovative and
reflective
societies

PROCEEDINGS

ISBN 978-84-121798-1-1

24th/25th – NOVEMBER/2020

Universitat Politècnica de València

III INTERNATIONAL CONFERENCE ON CLUSTER RESEARCH [ONLINE]

Editors

*José Luis Hervás-Oliver
Rafael Boix Domenech
Sofía Estelles-Miguel
Carles Boronat Moll*



GENERALITAT
VALENCIANA

Conselleria d'Innovació,
Universitats, Ciència
i Societat Digital

AORG/2020/A/039



UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA

UNIVERSITAT
DE VALÈNCIA

*RC2020 is
respectfully balanced
for gender equality*





Directores del evento:

José Luis Hervas-Oliver

Rafael Boix-Domenech

Editores:

José Luis Hervas-Oliver

Rafael Boix-Domenech

Sofía Estelles-Miguel

Carles Boronat-Moll

Con la financiación de:



Este congreso está equilibrado desde el punto de vista de la igualdad de género.



RETHINKING CLUSTERS 2020



Congresos UPV

RETHINKING CLUSTERS 2020

III International Conference on Cluster Research

Valencia

November, 24th-25th, 2020

Los contenidos de esta publicación han sido evaluados por el Comité Científico que en ella se relaciona.

ISBN: 978-84-121798-1-1

Editores:

José Luis Hervás-Oliver

Rafael Boix-Domenech

Sofía Estelles-Miguel

Carles Boronat-Moll



RETHINKING CLUSTERS 2020. Se distribuye bajo licencia de Creative Commons 4.0. Internacional



Editors

José Luis Hervas-Oliver

Rafael Boix-Domenech

Sofía Estelles-Miguel

Carles Boronat-Moll

Organizing Committee

José Luis Hervas-Oliver

Rafael Boix-Domenech

Carles Boronat-Moll

Sofía Estelles-Miguel

Francisca Semper-Ripoll

Francesco Capone

Annalisa Caloffi

Luciana Lazzeretti

Silvia Rita Sedita

Tito Crissen



Chairs of the Sessions

María Blanca de Miguel Molina

Carles Boronat-Moll

Francisca Semper-Ripoll

Gregorio Rius Sorolla

José Luis Hervás-Oliver

Marival Segarra Oña

Rafael Boix Domenech

Sofía Estelles-Miguel

Key-Note Speakers:

Roberta Capello, professor at Politecnico di Milano.

Luciana Lazzeretti, University of Florence, Italy

Silvia Rita Sedita, University of Padova, Italy

Philip Cooke, Bergen University College, Norway.

Andrés Rodríguez-Pose, London School of Economics, UK

Olav Sorenson, Joseph Jacobs Chair in Entrepreneurial Studies, Professor of Strategy, and Faculty Research, Director of the Price Center for Entrepreneurship & Innovation at the Anderson Graduate School of Management at UCLA, USA.



Scientific Committee

Chair of the Scientific Committee

José Luis Hervás-Oliver

Rafael Boix-Domenech

Secretary of the Scientific Committee

Sofía Estelles-Miguel

Carles Boronat-Moll

Members:

Andrés Rodríguez-Pose. London School of Economics, UK.

Annalisa Caloffi. University of Florence, Italy.

Blanca de Miguel-Molina. Universitat Politècnica de València, Spain.

Carles Boronat-Moll. Universitat Politècnica de València, Spain.

Davide Parrilli. Bournemouth University, UK.

Dieter Kogler. University College Dublin, Ireland.

Ekaterina Turkina. HEC, Montreal, Canada.

Eleanora Di Maria. University of Padova, Italy.

Fiorenza Belussi. University of Pavoda, Italy.

Francesc-Xavier Molina Morales. Universitat Jaume I, Castelló, Spain.

Francesco Capone. Universtity of Florence, Italy.

Francisca Sempere-Ripoll. Universitat Politècnica de València, Spain.

Gregorio Gonzalez Alcaide. University of Valencia, Spain.



Isabel Díez. Universidad Complutense de Madrid, Spain.

José Luis Hervás-Oliver. Universitat Politècnica de València, Spain.

Jose Antonio Belso. Universidad Miguel Hernández, Spain.

Leila Kebir. Université de Lausanne, Switzerland.

Lisa de Propriis. University of Birmingham, UK.

Luciana Lazzeretti. University of Florence, Italy.

María Angeles Montoro. Universidad Complutense de Madrid, Spain.

Marival Segarra-Oña. Universitat Politècnica de València, Spain.

Mercedes Delgado. MIT, USA.

Michaela Trippel. University of Vienna, Austria.

Philip Cooke. Bergen University College, Norway.

Philippe Gugler. University of Fribourg, France.

Rafael Boix-Domenech. University of Valencia, Spain.

Roberta Capello. Politecnico di Milano, Italy.

Rune Dahl Fitjar. University of Stavanger, Norway.

Silvia Rita Sedita. University of Pavona, Italy.

Tito Crissien. Universidad de la Costa, Colombia.



ÍNDEX

Economic Complexity and Industrial Upgrading in the Product Space Network - Opportunities for the City of Laval	14
Going beyond the classical focus: how cluster's dynamics improve customer's experience.	15
Modelling eco-innovation within clusters; identifying what matters to be greener	17
Cluster as a means of Regional Development of the Republic of Belarus.....	19
How to support cluster initiatives and not fail: Lessons from Poland.....	20
What it really means to get international for a cluster in I4.0 time? Insight from Hamburg Aviation cluster.	22
Which factors lead to a successful science park in China?	25
Clusters: the link between companies and sustainability	27
Business innovations in the hotel industry: The role of the inter-organizational network configuration	31
The role of Italian culture and language in the Economic Performance of <i>Made-in-Italy</i> .	34
The role of agency and culture in regional industrial path development: The case of a cross industry cluster in peripheral Norway	36
Firm performance and economic complexity: evidence from Italian Cultural and Creative Industries	39
The effect of advanced manufacturing technologies on occupations, skills and tasks in the Emilia-Romagna region	42
Revenge of the kimono cluster: pathways to revitalize the cultural heritage through digitalization	44
Environmental commitment, institutions and cluster effects	45



Social Innovation and Corporate Responsibility in Mature Clusters: The Role Leading Firms in Globalized Clusters.	47
Challenging the “Made in”along Global Value Chains. Evidence from Italian Industrial District	48
Toward system-based models of universities: a cluster analysis based on Italian data	50
Winner and loser regions: An analysis of business relocation in Spain	52
Do Innovation hubs matter for industrial transition? Innovation Policies in a transforming economy. The case of Piedmont Region.	53
Structuring multi-level identities in clusters: The Brazilian wine-making region “Serra-Gaúcha”	57
The Industrial Symbiosis as a Trigger of the Localised Spillovers in an Industrial Park	59
Towards Smart Cluster Policy in the V4 Countries	60
Environmental Sustainability in Clusters: More than Inevitable Cost to be Incurred?.. . . .	61
Rethinking the literature on clusters: contemporary debates, active research fronts, and agenda for future research	62
Employment and income trajectories in productive clusters: an application for the Brazilian metal mechanical industrial complex.	64
Knowledge Bases and Regional Development: an application of the "SAS Model" to the Brazilian Economy	65
Regional Innovation Systems Under Pressure?	66
The entry of MNEs in clusters. A comparative case in the ceramic industry between Italy and Spain	67
Policy Inuence in the Knowledge Space: a Regional Application	68
The role of creative hubs for place-based intercultural dialogue	71
Wine industrial districts in Spain: an analysis from a historical perspective	73



Sustainable development of cluster organizations	76
Cities Networks and Exploratory Innovation	78
Study of La Paz (Bolivia) tourism industry as a promoter of an Entrepreneurial Ecosystem	82
Elements of an entrepreneurial ecosystem based on tourism in Malabo, Equatorial Guinea	84
The Contribution of Tourism Clusters on Regional Development with Special Regard to Safety and Security Factors: The Case of the Golden Triangle Region in Jordan.	86
Integrating firms' strategies in cluster life cycle dynamics and resilience – an analytical framework	88
Knowledge Connectivity of Global Cities and Foreign R&D Investment: Organisational Pipelines versus Distributed Ownership.....	93
Rise and fall of interdisciplinary inventive activities in European bioclusters: a network approach	94
Industrial dualism in cluster networks of developing countries	97
Agglomeration, Vertical Disintegration and Specialization in the Knowledge Intensive Business Services: empirical evidence on the Italian provinces	98
Formal clusters supporting small firms' internationalization: a case of public-private interaction	101
How do Clusters Foster Sustainable Development? An Analysis of types of cluster governance for environmental improvements in SMEs to SDGs	105
Ecosystems of Transformational Social Entrepreneurship in Communities to Territorial Growth: Social Innovation to a New Model of Social Responsibility for Sustainable Development	106
Spatial residential patterns of workers in the creative industries: an exploratory analysis for the city of Madrid	107
Building knowledge and catching-up by engaging in backward and forward global value chains	110



Are the secrets of industry in the air of NYC? The importance of geographic proximity between digital startups and venture capital funds in the New York City cluster.....	111
The relationship between the Structural Aspects of the Network in Innovation Activities: A Study in the Brazilian Wine Cluster of Serra Gaúcha	112
Clusters life cycle and multilevel orchestration	114
Is the Northern Powerhouse Strategy maximising the power of the North of England? An approach by urban ownership links between firms	115
Searching through the Haystack - The relatedness and complexity of prioritized industries	117
Exploring the Artificial Intelligence Ecosystem. Theoretical framework and critical issues	118
Digital strategy in the post Covid-19: the case of Florence museum cluster	119
Open innovation and smart manufacturing. How openness boosts innovation in I4.0.	120
The role of inventors networks and variety for breakthrough inventions. A USPTO patent study in Italy from 1971-2010	121
The Marshallian industrial district as a living innovation machine: modelling technological innovation in space and time variable-geometry units using big data and machine learning	123
Searching for rare diamonds? Industrial districts and innovation in Spain and Italy...	126
Anatomy of a techno-creative community: the role of places and events in the emergence of projection mapping in Nantes	129
Clusters and regional industrial restructuring: Agency and asset modification	131
Language, culture, and local economic development.....	134
Visualizing Research on Industrial Clusters and Global Value Chains: A Bibliometric Analysis	136
Chinese ethnic clusters at the crossroad? the case of the Chinese leather clusters in Florence	137



Public policies for economic and cultural contribution through clusters and music: Case Bogotá D.C	139
Rise and fall of the Sinos Valley footwear cluster: a tale of a supercluster	142
Enhancing Competitiveness of Cluster Firms: The Role of Cluster Social Capital and Firms' Involvement in Cluster Activities	146
Environmental Innovation across SMEs and large firms in Europe: The importance of STI and DUI drivers	150
The R&D 'fetish' and the drivers of SME innovation in the regions of EU	151
SME modes of innovation embedded in innovation systems: technological innovations, STI and DUI drivers in Europe.	152
Smart Specialization in a mature industrial district : understanding change, complexity and diversification through patent analysis	153
Designing innovation policies around Industry 4.0: the case of the Valencian Region in Spain	154
Creativity as transversal power for cooperation and innovation: the potential of CCI in rural areas and the impact of new technologies on subsectors of CCI South Tyrol (Italy)	155
The Value of the Contractual Collaboration with University in Firm's Innovation Outputs: Evidence from China	157
Footwear industrial districts in Alicante: a detailed analysis	160



Economic Complexity and Industrial Upgrading in the Product Space Network - Opportunities for the City of Laval

Yihan Wang, Assistant Professor, Department of Strategy and Entrepreneurship EM Normandie Business School, Métis Lab yihan.wang@hec.ca

Ekaterina Turkina, Associate Professor, Department of Entrepreneurship and Innovation HEC Montréal. ekaterina.turkina@hec.ca

Abstract

This paper studies a city-region's multi-level competitiveness based on the configurations of local product space network and agglomeration of Revealed Competitive Advantage (RCA) sectors. We undertake a mandate studying the economic complexity of the City of Laval and explore the opportunities of industrial upgrading in its product space network. Addressing the importance of subnational analysis of economic complexity, we find the divergence of a city-region's RCA sectors at regional, national and global levels. We also imply the contribution of the structural holes of a city-region's product space network across RCA sectors as potential fields to attract FDI inflow and enhance economic growth. Then, we discover the correlated spatial agglomeration of RCA and structural hole sectors within a city-region's hierarchical ecosystem. Finally, we conclude the practical implications for policy makers and discusses future research directions.

Keywords: Laval, Revealed Competitive Advantage, spatial agglomeration



Going beyond the classical focus: how cluster's dynamics improve customer's experience.

Ángel Peiró-Signes *Universitat Politecnica de Valencia, Spain, Cornell University, USA.*
anpeisig@omp.upv.es

Marival Segarra-Oña. *Universitat Politecnica de Valencia, Spain, Cornell University, USA.*
maseo@omp.upv.es

Rohit Verma. *Cornell University, USA.* rv54@cornell.edu

Abstract

The relations between location and higher competitive levels due to the benefits of proximity have been scarcely studied regarding service clusters, but also analyzing to which point is the knowledge creation taking benefit of location, or vice versa. There is a research gap regarding, on one hand, how those benefits can impact on the clients' value creation perception and, on the other, on how affect the operational cost.

We develop our empirical analysis on the health industry. Our objective is to compare hospitals' performance in-clusters vs outside health clusters. Performance is studied from two perspectives, patient- and caregiver-centered experience of care and efficiency and cost reduction.

We retrieved information on the location quotient for the MSA for the Local Health Service cluster (Source: <http://clustermapping.us/>). This local cluster includes: Hospitals, Healthcare Provider Offices, Home and Residential Care, Drug Stores, Medical Laboratories, Funeral Service and Crematories, Optical Goods Retailing and Medical Equipment Distribution and Rental, based on the North American Industry Classification System NAICS.

As our aim is to identify those Hospital located in MSA that are Local Health Service clusters, we matched Hospital zip codes and MSA areas using data from the US Department of Labor. At the end of the process we had 281 hospitals located on MSA Health Service clusters. Additionally, we extracted average wages values for each area in which the hospitals are located to control for the standard of living in the area. On the other side, we use Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey results to evaluate the patient experience. HCAHPS is a national, standardized survey about the experience of adult patients during a recent hospital stay. The survey covers 8 dimensions of hospital experience. We extracted HCAHPS dimensions linear mean value from the Hospital-level results for the HCAHPS survey. These values are composites obtained through the aggregated results on the questions in HCAHPS survey which ultimately are used to calculate the hospital rate.



To examine the cluster effect on the patients' hospital experiences, first we classified first the hospitals in the database in two groups. In and outside a local healthcare service cluster. As indicated before we use MSA LQ values. Hence, we coded with 1 those hospitals in an MSA with all LQ value equal or higher than 1.25, and with 0 those that were MSA LQ was lower than the established threshold. We also coded as 0 those outside any of the MSA, as the economic and social activity in those geographical areas does not justify the generation of the cluster synergies for a local service cluster.

Secondly, we controlled for some variables that might have some impact on hospital experience. We generated regression models taking as dependent variables each of the dimensions evaluated through composites in the HCAHPS survey by hospital.

Results show that there are significant differences in Patient and Caregiver Centered Experience while the overall rating of hospitals shows not significant differences, neither can be found differences in the cost-efficiency, clinical care or safety domain. These results open a new field of study considering client's satisfaction benefits associated to service clusters dynamics with interesting managerial implications.

Keywords: hospital, customer experience, location quotient, survey



Modelling eco-innovation within clusters; identifying what matters to be greener

Nohora Mercado-Caruso. Universitat Politècnica de València y Universidad de la Costa, Barranquilla, Colombia. nmercado1@cuc.edu.co

Marival Segarra-Oña. Universitat Politècnica de València. maseo@omp.upv.es

Abstract

In recent years, an awareness has been generated about the excessive use of resources as well as the need to provide cleaner production alternatives and to create ecological products and sustainable business strategies. In this context, eco-innovation is emerging as an optimal solution. This paper presents a study of eco-innovation in a specific environment, the industrial cluster, as a structure in which cooperation and competition have proven to be a source of competitive advantages. Thus, the research question we ask is what are the factors that favour eco-innovation in industrial clusters? Through an exhaustive analysis of the literature, we propose a model based on six internal factors and three external factors that explain what drives eco-innovation activities in industrial clusters, identifying those factors that intervene in their behaviour.

The proposed internal factors are:

- Capacity of the cluster, which analyses the capacity of human resources, technology and knowledge transfer available to companies belonging to the cluster in order to deal with ecoinnovations.
- Demand factor, which analyses the pressure on consumers to use greener products and how governments and incentive policies affect collective awareness of the market.
- Cooperation, which establishes the synergy between the actors in the cluster, while the competitive pressure factor pressures companies to seek to create a differentiation in their products or services that allow them to survive in the market.
- Environmental policies and regulations in clusters, which operates through actions that promote government incentives for the development of industries, as well as regulations for their good development.
- The level of development of the cluster, which is related to understanding the origin of the cluster; in this case, the spontaneous or natural clusters and cluster initiatives will be studied.



The proposed external factors are:

- Economic effect due to eco-innovative behaviour, which is related to cost savings for ecoinnovative activities and is very significant due to its contribution to double externality.
- The eco-innovative effect, which is the result of good environmental practices, from which a result is the presence of cleaner technologies, reduction of pollution levels, introduction of circular economy, more efficient manufacturing processes, reuse of materials, etc.
- Access to new markets, which is related to eco-innovation in products and marketing strategies that promote sustainability in products, with high added value.
- Considering the above, the validation of this proposed model and its subsequent application as a tool for analysis and improvement of the level and innovative eco capacity in industrial clusters will have implications both at the strategic level in business decision-making and at the operational level in the field of cost reduction or use of resources.

Keywords: eco-innovation, clusters, economic effect



Cluster as a means of Regional Development of the Republic of Belarus

N.P.Dragun. Candidate of Economics, Associate Professor, Head of the Department of Consolidated Planning and Methodology of Regional Development, Research Institute for Economic Development of the Ministry of Economy of the Republic of Belarus. dragunnp@gmail.com

I.N.Rusak. Candidate of Economics, Associate Professor, Head of the Department of Organization Economics, of the Academy of Public Administration under the President of the Republic of Belarus. rusakin@mail.ru

A.D.Lutsevich. Candidate of Economics, Associate Professor, Head of the Department of Management of Economic Systems, of the Academy of Public Administration under the President of the Republic of Belarus. Lgohn@yandex.ru

Abstract

This article presents a brief analysis of the approaches determining the factors of cluster development available in the scientific literature and regulatory documents, on the basis of which the factors contributing to the emergence and effective functioning of clusters in the regions of the Republic of Belarus are determined.

The analysis of the results of monitoring of organizations of various types of economic activity is presented, and finally 3 groups of factors that influence the willingness of organizations to interact within the cluster are identified. According to the results of the investigation, potential agro-industrial clusters of the Gomel region were identified and their composition was determined, a number of conclusions were made and some practical recommendations were developed for government bodies aimed at enhancing the cluster development of the regions of Belarus.

Keywords: cluster, the factors of cluster development, the Republic of Belarus, region.



How to support cluster initiatives and not fail: Lessons from Poland

Dominika Kuberska, University of Warmia and Mazury in Olsztyn, Poland, dominika.kuberska@uwm.edu.pl

Marta Mackiewicz, Warsaw School of Economics, Poland, mmackie@sgh.waw.pl

Abstract.

Guiding economic development on the right track is challenging. The difficulties that may arise in the process result from the fact that the socio-economic, as well as the political landscape, constantly changes. Also because public intervention does not necessarily lead to an efficient allocation of resources. Nevertheless, governments in many countries have adopted the idea that through supporting clusters and cluster initiatives and investing resources in cluster development they can accelerate economic development. However, different countries and regions have focused on various aspects of cluster development and employed diverse tools. Thus, a few decades after the cluster concept entered discussions among researchers and policymakers the results of the implementation of cluster policies vary. As economies are constantly in need of effective policy tools that can assist their efforts aimed at development, it is essential to draw a lesson or two for them through an examination of certain cases of cluster policies. With this in mind, this paper considers the case of cluster policy in Poland. The objective of the paper is to investigate the evolution of cluster policy in Poland, identify success factors and propose a new model of cluster policy.

To examine the changes in the approach to cluster policy in Poland the authors analyzed documents, reports, and literature on the subject. In addition, in-depth interviews with policymakers were conducted. The discussion on success factors was carried out using a comparative analysis of policies conducted in Central and Eastern European countries.

Moreover, a case study method was also employed to provide better recognition of success factors.

As a result of the analysis, the following phases of cluster policy evolution have been identified over the past 20 years: (1) inception; (2) extensive growth; (3) decline; (4) rebirth.

Key success factors include: an implemented system for selecting National Key Clusters, the development of cooperation (mainly in the most developed cluster



initiatives) and the possibility of using support instruments simultaneously at the national and regional levels.

Leaders who convinced various participants to cooperate and found initiatives and funding opportunities to ensure the development of the cluster were identified as another success factor.

Results of the comparative analysis of cluster policies in Poland and selected Central and Eastern European countries show that positive results can be achieved if public intervention is continuous and tailored to the needs of cluster initiatives at different development stages.

The development of cluster assessment criteria in order to categorize cluster initiatives and establish an accreditation system is good practice. Furthermore, adoption by the government of a cluster policy at the national level and implementation of a comprehensive strategy for cluster development at regional and national levels is a basic condition for cluster policy success. Supporting innovative activity and internationalization of clusters is an important element of public intervention in the Central and Eastern European countries herein analyzed.

Based on the conducted study, it can be concluded that supporting emerging cluster initiatives in Poland has been ineffective. Better results were achieved by supporting cluster organizations that have attained a certain level of development and have established themselves as a formal initiative. These cluster organizations create links between cluster members strong enough to maintain a presence after the cessation of public funding.

Interviews with cluster coordinators and the case study have shown that cluster initiatives want to engage in public tasks. They already conduct dual studies in cooperation with universities, play the role of incubators for start-ups and are an operational tool for implementing smart specializations in the context of building cooperative relationships.

The paper has a practical dimension providing recommendations for future cluster policies.

The results of the study confirm the legitimacy of the introduction of the model, which assumes, on the one hand, supporting the potential of clusters, and on the other, calls for engaging clusters to perform public tasks in specific areas, such as: education, digital transformation and preparation for the needs of industry 4.0, the circular economy, regional development, and economic promotion.

Keywords: clusters, cluster initiatives, cluster policy, public intervention, Poland



What it really means to get international for a cluster in I4.0 time? Insight from Hamburg Aviation cluster.

Marta Götz, Vistula University, m.gotz@vistula.edu.pl ^{1*}

Abstract

This paper touches upon the process of cluster internationalisation in the context of fourth industrial revolution (Industry 4.0; I4.0). Available so far knowledge about the mutual “cluster-I4.0” relation is far from being ‘stylized fact’. Industry 4.0 stands for digital transformation of business models and enables the fusion of virtual and real worlds (Kagermann, Wahlster, Helbig, 2013). It is also perceived as state sponsored vision of modern smart manufacturing. Despite the growing interest, current lack of an agreed-upon Industry 4.0 definition poses limitations to both the theory building and research comparability (Culot et al. 2020). Discussion presented in this paper which revolves around the localization, globalization and digitalization, is framed in concept of stretching (Njøs et al. 2017; Bathelt et al. 2004); in particular the hubbing - i.e. expansion in geographical scale.

This paper lays out the difference between cluster internationalisation understood in terms of cluster members’ foreign expansions via export or FDI (DiMaggio & Powell, 1991; Sölvell, 2008; Andersson, 2013; Dohse et al. 2018; Gancarczyk & Gancarczyk 2017; Pla-Barber & Alegre 2007; Zen et al., 2011, Richardson et al., 2012; Dhandapani et al., 2015; Colovic & Lamotte, 2014) and hubbing regarded as ‘scale expansion’ mainly via the cluster organisations as well as gaining new members and new territory (Njøs et al. 2017). It is argued, that, whereas the classic cluster internationalisation should be associated with revealed competitiveness which implies that local firms have competitive edge and/or the localisation is attractive for foreign companies; hubbing processes - encompassing activities such as concluding partnerships, observatory membership, seeking foreign knowledge, sourcing foreign know-how - aim at sustaining or increasing the competitiveness.

¹ * Research has been funded under the Bekker Programme of the Polish National Agency for Academic Exchange (NAWA) – decision no. PPN/BEK/2018/1/00034/DEC/1 – research stay at IfW Kiel, Germany.

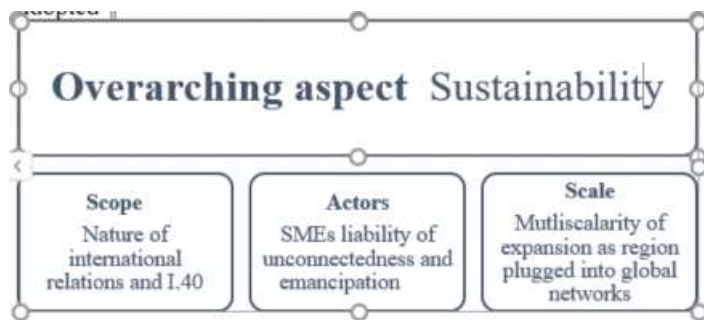


This paper adopts the qualitative research approach - the grounded theory method (GTM) - and draws on the case study exploiting the I4.0 aviation cluster in Hamburg - the HAv cluster (Dominguez, Mayrhofer 2017; Zaeferian, et al. 2016; Ghauri, & Gronhaug, 2005; Karlsson 2008; Glaser&Strauss, 1967; Strauss&Corbin, 1990; Charmaz, 2009; Eisenhardt, 1989; Fletcher, Zhao, Plakoyiannaki, & Buck, 2018; Karafyllia&Zucchella 2017). Located in northern Germany in free Hansa Hamburg Metropolitan Region, HAv epitomises how technological changes may make the cluster obsolete (Buxbaum-Conradi 2018). HAv combines both the organic bottom-up agglomeration of entities as well as institutional layer. Main actors include Airbus, Lufthansa Technik and Hamburg Airport, which are accompanied by numerous SMEs. HAv has been rewarded with various awards and won cluster competitions such as LECC Leading Edge Cluster Competition. It is one of the aerospace clusters identified in developed countries (Turkina & Van Assche 2018); third largest in the world after Seattle with Boeing and Toulouse hosting the Airbus (Bräuninger et al., 2010; Buxbaum Conradi, 2018).

Semi-structured guided interviews with cluster representatives - officials as well as scholars and participating companies - yielded insight on the peculiarities of internationalisation of cluster in the Industry 4.0 era. The investigations followed the sequence of steps with the first being the “quotations” i.e. the informant centric data. Concepts and codes have been established as 1st order constructs in the process of continuous iterative collecting and analysing gathered information. In the next stage, these have been elaborated as 2nd order constructs constituting the properties of major category (set in advance because of the adopted hybrid version of GTM, Corbin & Strauss, Glaeser).

The findings stress that sustainability is a common thread and overarching aspects binding all kind of activities conducted by local stakeholders. International relations are of utmost importance for SMEs suffering the *unconnectednes* liability as they can empower such firms and help them to *emancipate* (Baum, Oliver 1991). International expansion of cluster in I4.0 time implies new forms of collaborations with I4.0 being the subject of such cooperation as well as a tool facilitating it. It involves that cluster being plugged into global chains and networks (De Marchi, Di Maria, 2019; MAKERS papers) features external outbound relations which are performed at multiple levels (Hassink, Gong, 2017). Hubbing is a multi-scalar process which is taking place at different levels and in different scales from expanding the local footprint to concluding global partnerships.

Figure 1. Key categories as emerged out of qualitative research case study - HAv, GTM adopted. Source: Own proposal.



The results obtained could contribute to the extant literature on clusters by advancing the more nuanced approach to cluster internationalisation in I4.0 time. The scarce research landscape on geographical aspects of digital transformation is still eclectic and diverse (Castelo-Branco et al., 2019). Issues covered also seem to address the recent scholarly trend to regard clusters as dynamic and complex systems whose evolution depend on the capacity to reach out outside to reap and diffuse new knowledge (Belussi, & Hervas-Oliver, 2016).

Keywords: Industry 4.0, case study, aviation cluster



Which factors lead to a successful science park in China?

Chen Rui. Maastricht University. r.chen@maastrichtuniversity.nl

Boris Lokshin. Maastricht University

Pierre Mohnen. Maastricht University and UNU-MERIT

Abstract

Background and literature gap

For the past two decades, science park literature has grown rapidly. Three recent literature reviews thoroughly analyze the past findings of science parks and suggest avenues for future research (Hobbs et al. 2017; Henriques, 2018; Lecluyse, 2019). Researchers evaluate the positive effect of science park on firm innovation, or on regional development. They detect the potential mechanism by which science parks could stimulate innovation, such as co-operations and knowledge spillovers among firms, universities and research institutions. Until recently scholars addressed the importance of the heterogeneous nature of both firms and science parks (Fukugawa,2015; Albahari et al.,2018). A few studies investigate the success features of science parks in Italy, Spain, Japan, UK, and the US (Siegel et al. 2002; Link et al., 2005; Fukugawa,2015; Guadix et al., 2016; Liberati et al., 2016; Lamperti et al., 2017; Hobbs et al., 2017; Albahari et al.,2018). They find that park size, age, being close to university, management factors can influence the impact of science parks.

However, the literature of heterogenous science park features are still rare. Lecluyse (2019) proposes that on the input side, variables such as ownership, governance and culture will need more analysis, while on the output side, there is a lack of performance variables at the science park level. The literature on science park in China comprises mostly case studies or empirical work based on surveys (Hobbs et al. 2017). They try to justify the science park policy by its contribution to regional development (Hu, 2007), rather than by its stimulating effect innovation. Due to limited data on science parks, the characteristics of science parks and their effect on growth remain unresearched. There is a gap of how science parks become innovative and successful in developing countries.

Research question

We examine which science park features will lead to innovation and growth. This study is the first to comprehensively analyze science park features at the park level in developing countries. It includes all the initial 53 science parks established by the Torch program in early 1990sin China.



Methodology

Science park features are introduced in a productivity growth equation all owing for persistence in productivity and controlling for fixed effects, as in Lokshin et al. (2008).

Empirical Material

Our main dataset is the Torch Yearbook, which contains time variant park level information from 2007 to 2017. The nominal variables are deflated by a weighted average of industry price deflators according to the industry composition of the science park (39 2-digit industries). Then we achieve time invariant variables by linking the Torch Yearbook to other sources. The second source is the NBS (National Bureau of Statistics) survey that contains firm level information in the year 2007. From the NBS firm level data, we construct the industry composition and ownership composition of each science park. Finally, we add additional park level variables from the website of each science park, including adjacent universities and research centers within the park.

Results

Regarding labor productivity growth, we find that parks with higher labor quality (measured by professional titles), more specialized parks, parks closer to university and those mostly present in Chemical manufacturing (CIC-26) and Non-metallic minerals product industry (CIC-31) are more productive. The ownership composition does not have a significant impact. Regarding technical productivity growth, we find that labor quality has a significant positive effect on productivity of the park, reflected by the variable diploma. Park concentration has a positive significant effect on technical productivity, which means more specialized parks are more productive in innovation. Science parks that major in industry General-purpose equipment manufacturing industry (CIC-35) are more productive in innovation. The ownership composition does not have a significant impact.

Contribution to Scholarship and Practice

We contribute to the literature in three aspects. First, we analyze the features of labor quality, industry composition and ownership composition of firms. Second, we use unique innovation measures. Thirdly, this study quantitatively analyzes the success of science parks in the context of developing countries.

Keywords: China, Science park, developing countries



Clusters: the link between companies and sustainability

Joaquín Sánchez-Planelles, Universitat Politècnica de València, joasanpl@ade.upv.es
Marival Segarra-Oña, Universitat Politècnica de València, maseo@omp.upv.es

Abstract:

Introduction

Literature about sustainability and sustainable businesses has become a large field of study during last years. This field is growing so fast that there are sub-areas or bodies of literature among the sustainability with clear boundaries between each other. This has provoked the apparition of several methodologies and tools for turning traditional companies into sustainable business models.

Therefore, a deep analysis of the literature about sustainability has resulted in the following classification of concepts according to the theory building process in Social Sciences:

- **Sustainable Operations:** Activities and business process that reduce the environmental impact only focusing on specific areas of the organization (i.e. product development, waste management, eco-innovation, etc.).

- **Sustainable Methodologies:** Methodologies and tools designed for managers to improve company's performance and sustainability.

- **Sustainable Business Models:** Business model that creates competitive advantage through superior customer value and contributes to a sustainable development of the company and society.

- **Holistic Sustainability:** Policies with a long-term vision with a broad perspective that encompasses sustainable actions for reshaping the interaction of the company with its stakeholders.

However, researchers have not paid enough attention to the contributions of clusters to sustainability. There are some examples of this kind of studies but focused mainly on Corporate Social Responsibility (e.g. Kenya flower cluster or Yara and African logistics clusters) (Irena, S. & Bankova, Y., 2017). Despite the existence of relevant empirical examples, is still missing a field of study to theorize the impact of clusters in corporate sustainability (Derlukiewicz, N., et al., 2020).

Objectives



This paper aims to classify the sustainable practices deployed by clusters and to analyse the differences between them depending on the clusters' characteristics.

Methodology

The methodological process has been deployed through a snowballing procedure (Wholin, C. 2014) that required the research of the following keywords: sustainability, sustainable business models, clusters and sustainable development.

The information has been retrieved from two different databases:

- Scientific literature (e.g. Web of Science, Scopus).
- Reports published by private companies, public administrations or Foundations.

Results

Clusters enhance sustainable practices among companies through different activities: collecting the strategic goals of several companies in order to influence regional governments, building social trust, improving the social acceptance of the external effects inherent to the enterprise growth, boosting the interest in eco-innovative activities and through the transfer of the knowledge between companies and institutions (Derlukiewicz, N., et al., 2020).

Table 1 show several European clusters, contribution of each one to sustainable development and the classification of their contributions according to the sustainable concepts presented above.

CLUSTER OF NAME	SECTOR	S3 EU PRIORITY AREAS	SUSTAINABLE CONCEPT
TRACK	Agricultural Inputs and Services	Sustainable innovation, Sustainable agriculture	SUSTAINABLE OPERATIONS
TEX4IM	Textile Manufacturing	Manufacturing and Industry, Textiles, wearing apparel and leather and related products	HOLISTIC SUSTAINABILITY
S3martMed	Biopharmaceuticals	Human health and social work activities, Human health activities (medical services)	HOLISTIC SUSTAINABILITY
EACP-EUROSME	Aerospace Vehicles and Defence	Aeronautics and Space, Aeronautics	SUSTAINABLE BUSINESS MODEL
EACN	Automotive	Advanced manufacturing systems	SUSTAINABLE OPERATIONS
DIGICLUSTERS	Food Processing and Manufacturing	Information and Communication Technologies (ICT), Computer programming, consultancy and related activities	SUSTAINABLE OPERATIONS
CYBER SECURE LIGHT	Lighting and Electrical Equipment	Digital Agenda, ICT trust, cybersecurity and network security	SUSTAINABLE BUSINESS MOD



CONNSENSYS	Food Processing and Manufacturing	Manufacturing and Industry, Food, beverage and tobacco products	SUSTAINABLE OPERATIONS
AI4Diag	Biopharmaceuticals	Manufacturing and Industry, Biotechnology	SUSTAINABLE OPERATIONS

Table 1. European Strategic Cluster Partnerships for Smart Specialization Investments (ESCP-S3), its contribution to sustainable development and sustainable concept classification (Derlukiewicz, N., et al., 2020).

According to Porter (2012), refocusing clusters to shared value can lead companies to growth and productivity gains. Specifically, clusters can reduce costs, improve the supply chain, improve distribution infrastructure, workforce access and profitability. These changes will lead to the following social results: improvement of the education, job creation, health and family's incomes.

CLUSTER OF NAME	COUNTRY	SECTOR	SUSTAINABLE PRACTICES	SUSTAINABLE CONCEPT
Kasur	Pakistan	Leather tanning	Construction of common effluent water treatment plants	SUSTAINABLE OPERATIONS
Tiruppur	India	Leather tanning	Construction of common effluent water treatment plants	SUSTAINABLE OPERATIONS
León	Mexico	Leather	Promotion of environmentally friendly technologies	SUSTAINABLE OPERATIONS
Jalandhar	India	Football manufacturing	Child labor eradication schemes, and the implementation social welfare projects for stitchers and their families	HOLISTIC SUSTAINABILITY

Table 2. Classification of clusters placed in developing countries and its contribution to sustainable development (Lund-Thomsen, P. & Pillay, R., 2012).

Results show that clusters placed in developing countries are focused on fixing basic sustainable problems as effluent treatment plants or social issues like child labour eradication and clusters placed in developed countries are leading more complex projects (e.g. developing sustainable products and services or computer programming).

Discussion

Literature research has demonstrated the key role of clusters for adopting sustainability among companies, however, the way clusters do it differs depending on the unit of analysis they chose. As table 2 shows, clusters placed in developing countries use to focus their efforts on sustainable operations (e.g. water treatment plants or another end-of-pipe solutions). Nonetheless, clusters placed in developed nations like European countries, even they also focus on sustainable operations, are able to diversify their efforts to other sustainable concepts like sustainable business model generation or holistic sustainability (Table 1).

This is an example of sustainable operations use to be the first actions in agenda for companies that start to become more environmental respectful. So, when nations keep growing and their industries turn more sophisticated, companies embrace more



complex sustainable policies like the sustainable business model generations or working for improving sustainability through the complete product life cycle.

Conclusion and futures lines of research

Nowadays, companies need to embrace sustainability in order to be competitive in current markets and clusters play an essential role on this shift. However, from an academic point of view, the analysis of the way clusters address sustainability is still a field of study in its infancy. Some of the key findings reveal that cluster use to focus their efforts depending on the kind of industry and specially the development degree of the country.

Therefore, it will be recommendable to deploy a new line of research for analysing how sustainable policies launched by clusters have evolved through years in order to determine if they started to work on improving sustainable operations, then advanced to sustainable business models until focus on holistic sustainable policies.

Keywords: Clusters, sustainability and sustainable business models



Business innovations in the hotel industry: The role of the inter-organizational network configuration

Thais González-Torres Department of Business Administration (ADO), Applied Economics II and Fundamentals of Economic Analysis, Universidad Rey Juan Carlos. thais.gonzalez@urjc.es
<https://orcid.org/0000-0002-3655-5441>

Eva Pelechano-Barahona Department of Business Administration (ADO), Applied Economics II and Fundamentals of Economic Analysis, Universidad Rey Juan Carlos. eva.pelechano@urjc.es
<https://orcid.org/0000-0001-9223-1794>

Fernando E. García-Muiña Department of Business Administration (ADO), Applied Economics II and Fundamentals of Economic Analysis, Universidad Rey Juan Carlos. fernando.muina@urjc.es
<https://orcid.org/0000-0002-7807-3715>

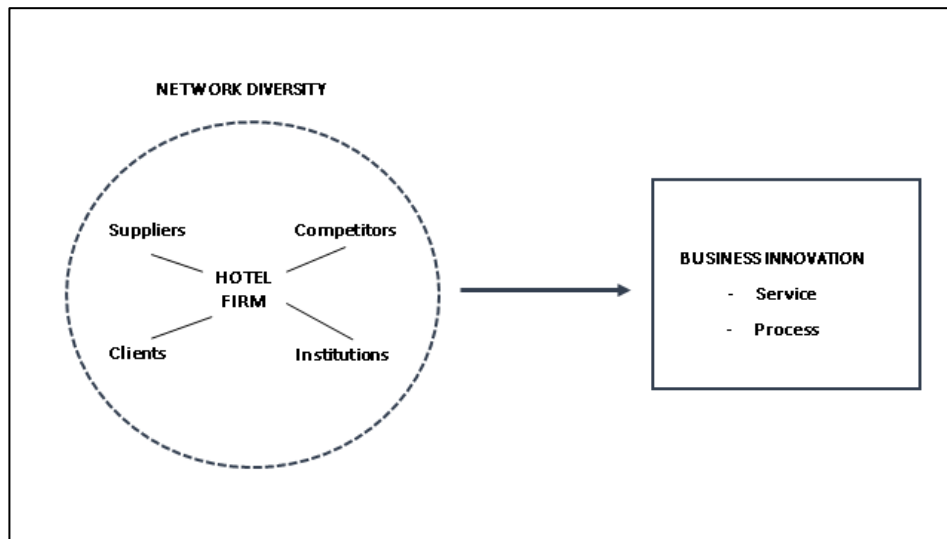
Abstract

Current hotel firms are facing a global business environment characterized by continuous transformation and high levels of competitiveness (Pappas, 2017). A potential way to adapt to this context is by introducing innovations. This can help firms to differentiate from competitors and thus achieving competitive advantage and economic returns (Hernández-Perlines, Ariza-Montes, Han & Law, 2019). However, the speed and flexibility required to adapt to dynamic and complex environments makes it difficult and inefficient for a single hotel firm to develop all the resources and capabilities needed to provide the accommodation service, developing innovation activities and remain competitive. For this reason, hotel operators are forced to collaborate in order to offer high value-added services while being efficient (Casanueva, Gallego & Revilla, 2015).

Firms can achieve innovative outcomes by exchanging resources through network interactions (Nieves and Segarra-Ciprés, 2015; Souto, 2015). The benefits obtained considering the complete structure of relationships are superior than those considering only individual alliances (Wassmer, 2010; Demirkan, 2018). However, research lacks the analysis of the multiple and simultaneous relationships maintained by the hotel firm through collaborative agreements (Soulard, Knollenberg, Boley, Perdue & McGehee, 2018).

To fill this research gap this article is focused on the study of the complete portfolio of alliances or *egonet* of the hotel firm (Ozcan & Eisenhardt, 2009; Wassmer, 2010). The main goal is to understand whether the network of inter-organizational relationships maintained by the hotel firm can improve its possibilities of introducing business innovations. The secondary objective is to understand who are the potential partners and their contribution of resources to the network for innovative purposes. To achieve these goals, this study presents a theoretical model based on the configuration of the inter-organizational network and its effect on the introduction of business innovations.

Figure 1. Conceptual model



The latest edition of the Oslo Manual (OECD, 2018: 20) define a business innovation as the introduction of “a new or improved product or business process (or combination thereof) that differs significantly from the firm's previous products or business processes and that has been introduced on the market or brought into use by the firm”. In services, a business product innovation may include significant improvements in how they are provided (efficiency or speed), the addition of new functions or characteristics, or the introduction of entirely new services (OECD, 2005). On the other hand, business process innovations may affect to a firm’s core activity of producing and delivering products for sale as well as all the ancillary or supporting activities, thus including those of organizational and marketing nature.

The simultaneous and multiple cooperative relations maintained by hotel firms involve a great range of diverse actors from different industries such as suppliers (e.g. catering firms), clients (e.g. tour operators or travel agencies), competitors (other hotel firms) and institutions (destination management organizations and universities (Zehrer, 2009; Sainaghi and Baggio, 2014; Salihoğlu & Gezici, 2018).

Hotel firms usually collaborate with suppliers and clients –vertical cooperation – to specialize on the development of their core activity –accommodation service – (Zehrer, 2009; Prebensen, 2014). In order to do so, the activities developed by other organizations are cleaning maintenance, social activities, administration and human resources (Rodríguez-Díaz and Espino-Rodríguez, 2006).

Horizontal cooperation with competitors – also called *coopetition* – is also relevant in hotel networks (Bouncken, Clauß and Fredrich, 2016). The main goals of



coopetition are improving the market share and competitive position and overcoming weaknesses (Chathoth and Olsen, 2003; Zehrer, 2009). *Coopetition* is usually focused on marketing and technology-based activities such as sales and reservation systems with the objective of developing global booking systems or attract customers (Chathoth and Olsen, 2003).

Finally, institutional collaboration with academic and public institutions represents an interesting option in environments with high risk of opportunistic behaviour (Surroca Aguilar and Santamaría Sánchez, 2007). Local public tourism organizations or destination management organizations (DMO) provide support by promoting and developing a particular destination (van der Zee and Vanneste, 2015). In addition, the introduction of new management practices and processes in the hotel industry is fostered by knowledge coming from external expert sources such as consultants or universities (Nieves and Segarra-Ciprés, 2015).

Following key recent literature, we propose that hotel firms with access to heterogeneous partners are more likely to be innovative (Cui and Connor, 2012; Rodriguez, Doloreux and Shearmur, 2017). This diversity will enable hotel firms to access to a wider, more diverse and non-redundant knowledge base as well as new knowledge combinations, increasing their innovative potential (Jiang, Tao & Santoro, 2010). In addition, the complementary nature may be crucial to compensate for each firm's weaknesses driving innovation activities (Tsou, Cheng & Hsu, 2015).

This article contributes to the developing literature on innovation and collaborative networks in hotels. Firstly, based on the international guide Oslo Manual (2005, 2018), it offers insights into the different types of business innovation and areas of innovation developed in the hotel industry. As a second contribution, we propose a diverse configuration of the alliance portfolio in order to exploit its strategic potential for innovation.

Keywords: business innovation, hotel industry, the inter-organizational network



The role of Italian culture and language in the Economic Performance of *Made-in-Italy*.

Amir Maghssudipou. Dept. of Economics and Management, University of Florence.

Annalisa Caloffi Dept. of Economics and Management, University of Florence.

Marco Bellandi. Dept. of Economics and Management, University of Florence.

Abstract

Traditionally, *Made-in-Italy* refers to groups of products belonging to food, fashion, furniture, and automation industries. They are distinctively export-oriented and plays a crucial role in a country that is ranked as the 7th largest exporter in the World (\$482 billion in 2018), contributing to make positive the national balance of trade also over the last ten years. On the one hand, *Made-in-Italy* products may be seen as goods used for basic tasks in everyone's daily life (to feed, to live, and to get dressed); on the other hand, they are typically high-quality and bring with them symbolic and aesthetic features pointing to a sense of status-related sophistication and refinement. They are produced in several Italian local productive systems that preserve cultural and artisanal heritage, but also innovate to be competitive in the market arena. Particularly, from the supply side, they are mainly produced in highly specialized local productive systems, such as SMEs industrial districts, characterized by strong local communities combining cultural and productive heritage and natural environments. From the demand side, such products are increasingly exported all over the world, in countries where new middle classes, wealthy people, and cultured elites are more and more attracted by high-quality and well-designed products, as well as, products that communicate high social status and conspicuous consumption. In this picture, even though the Italian language is a critical driver of such a productive culture, we know little about the relation between the latter and the economic performance of *Made-in-Italy* driven regions. Several aspects influence the global diffusion of the Italian language. Among others, Italians are historically migrants; bi-linguistic and bi-cultural transnational communities are increasingly established; schools of Italian language and specific courses at universities are diffused on a global scale. Furthermore, a network of national and regional institutions and cultural centres are internationally present. In this respect, an under-developed stream of the literature suggests that specific languages affect the understandability of a (product-related) content for external agents. Particularly, they can influence the comprehension of symbols as well as related cultural heritage from business agents of different regions.

With a multidisciplinary approach encompassing regional economics, trade theories, and linguistic insights, this work aims at offering an explorative investigation on the complex relationship between locations where the Italian language circulate in foreign countries and the economic performance of *Made-in-Italy* products at the Italian regional basis.



From the methodological point of view, we build an original dataset representing the scope of *Made-in-Italy* and differentiating for Italian regions of export. Then, after controlling for traditional variables affecting international trade, we include official statistics on the presence of the Italian language and culture abroad according to various criteria.

An extension of traditional Exponential Random Graphs Models (ERGMs) is implemented in order to control not only for the presence or absence of commercial trade of typical *Made-in-Italy* sectors but also for the weight of trade flows in terms of monetary values of exports. This model allows us to check network structural variables (for example, the propensity to have ties), relevant node-level characteristics (for example, the presence of Italy-related institutions and schools abroad), and also for several relational features at the dyadic level (for example, the value of diverse foreign direct investments).

In this framework, the present work aims at investigating the role network structures, countries' characteristics and heterogeneous ties linking Italian regions with other countries all over the world play for the economic performance and sustainability of *Made-in-Italy*. Finally, a few policy implications are provided.

Keywords: Italian culture, export, Social Network Analysis



The role of agency and culture in regional industrial path development: The case of a cross industry cluster in peripheral Norway

Emelie Langemyr Eriksen. University of Agder, Norway.

Arne Isaksen. University of Agder, Norway.

Jan Ole Rypestøl. University of Agder, Norway.

Abstract

The paper will study how firms in clusters upgrade and new cluster firms emerge, and how this affects regional industrial path development. The study departs from recent theorising about path development (Martin 2010, Isaksen et al. 2019), and employs this insight on cluster upgrading. Path development includes long term trajectory of industrial development, seen from a regional, national or technological perspective. Regional industrial path development occurs through the upgrading of existing industries and the creation of new industries in different ways, that is path importation, path branching, unrelated path diversification, and new path creation (Grillitsh et al. 2018).

Recent work emphasises that well-coordinated innovation systems often need to be reconfigured, exiting firms changed and new firms established to achieve changed or new regional industrial paths. Reconfiguration of innovation systems and firm changes take place through modification of system-level (e.g. new policy tools) and firms-level assets (e.g. new technology) (Binz et al. 2016; MacKinnon et al. 2019; Tripl et al. 2020). Asset modification includes to re-use existing assets, create new assets, and also to destruct or ‘unlearn’ old assets (such as norms and skills about outdated technology). Modifications are performed by strategic agency (Garud & Karnøe 2001).

We use these recent theoretical contributions about regional industrial path development on a study of cluster upgrading, and the study aims to add to the literature in two ways. First, by analysing the role of system level agency for the upgrading of clusters and regional industrial path development. Agency can be performed by, e.g. cluster managers, firm actors and others that create common available assets. Second, we zoom in on local culture as a critically important but often overlooked asset. Culture represents ‘part of a regions ‘collective personality’’ (Malecki 2012, p. 1033) that affects how actors perform in different situations.

The theoretical framework is illustrated through a case study of the iKuben cluster in Western Norway. The study focuses on cluster change through upgrading of existing and creation of new cluster firms, the role of agency and local culture in these developments, and how the development of the cluster influences regional industrial path development. iKuben includes about 60 members, mostly manufacturing industry and



ICT consulting firms, but also academia and public sector organisations. Most members are found in and around Molde municipality that has around 27,000 inhabitants and is fairly peripheral located.

iKuben is a policy cluster as it is member of the Norwegian innovation clusters program. However, it is also a ‘real cluster’ according to the interpretation that Malmberg and Power (2006) gave this concept some years ago. Thus, iKuben firms are involved in several forms of collaboration, which has contributed to a strong sense of community and joint goals of developing the region among different actors.

The empirical research questions include:

1. What types of new path development are taking place in the iKuben cluster and the Molde region?
2. What is the role of the local culture in path development in iKuben and Molde?
3. What are key agency and actors in the path development?

The case study includes interviews of firm leaders and policy actors, supported by secondary data, and we also plan to perform a survey to member firms. Our first interviews in the iKuben cluster demonstrate examples of industrial restructuring through path upgrading and branching. Some examples point to the fact that upgrading in the form of new inhouse activities has led to diversification through spin-offs.

One striking finding is that several firms link and employ seemingly unrelated knowledge and skill from other firms in their innovation activity. It is well-known from the literature, for example, on industrial districts and regional clusters, that mutual trust, common norms and value, and so on facilitate informal knowledge flow and interactive learning. However, earlier findings emphasise that such collaboration occurs mainly between firms in similar or related industries and production networks.

The iKuben cluster is different from typical single industry or related industry clusters. It is a cross industry cluster in a quite small and peripheral region. The cross-industry character of the iKuben cluster can stimulate collaboration within strategic fields such as innovation activity when firms have no or very few local competitors. But cross-industry also means that there exists little related technology, product and skill between firms. However, we find that specific features of the local culture stimulate cross industry collaboration in the iKuben case.

The literature on diversification has focused on hard, measurable factors such as technological, product and skill relatedness (Boschma 2017). We find that soft factors,



i.e. local culture, are important in our case. One informant, for example, argues for an unmeasured, large, positive effect of iKuben cluster. Furthermore, the interpretation among several interviewees is that firms in the Molde region help each other and want to strengthen the regional industrial and knowledge environment. One example is local firms that jointly took over a large, local company that was about to go bankrupt, and where the takeover was initiated by the fact that the company had many jobs and was an important customer for several local firms. Another example is several firms that cooperate with the local university college and R&D-institute to strengthen these two knowledge organisations. Such mindsets are seen to contribute to the establishment of the iKuben cluster organisation in the first place, and this collaborative and supportive culture has further been strengthened by the activity of this organisation's cluster building activities. Firms report about extended local collaboration through iKuben. This collaboration includes to discuss upcoming problems and gain ideas from firm leaders and employees in quite different types of firms.

We find that a few firm leaders, typically in traditional, local firms, have performed key agency in establishing the iKuben cluster organisation. The establishment was motivated by a need for more local firm collaborations (Isaksen et al. 2018). The cluster organisation was established in 2012, and the cluster manager has acted as an important system actor thereafter. The local culture consisting of helping other local firms did facilitate the firm collaboration that led to the cluster formation, and the cluster's activity with courses and joint projects has further strengthened collaboration and joint understanding between firm leaders.

We argue that the study of iKuben can contribute to (i) increased theoretical insight in cluster upgrading by use of the concepts of new regional industrial path development taken from the studies of regional industrial development, and (ii) by zooming in on the role of local culture and agency in new path development.

Keywords: Cluster, regional industrial path development, agency



Firm performance and economic complexity: evidence from Italian Cultural and Creative Industries

Chiara Burlina. *Social Sciences and Urban Studies. Gran Sasso Science Institute – GSSI.*
chiara.burlina@gssi.it ORCID ID: 0000-0002-1914-8772

Alessandro Crociata. *GSSI - Gran Sasso Science Institute.* alessandro.crociata@gssi.it

Abstract

Creative and Cultural Industries (CCIs) cover a relevant role in the current economic scenario, fostering regional GDP and employment growth. Under this label we find industries belonging to very different sectors, such as: music, art, videos, but also manufacturing, design, printing (EUROSTAT, 2018). This sector's variety positively affects the innovation rates of firms belonging to CCIs, which in turn impacts on regional development through cross fertilization and knowledge spillovers (Antonietti, 2015; Innocenti & Lazzarotti, 2019).

Among scholars, the definition of CCIs takes into consideration several aspects. Florida (2002) considers CCIs from a human capital point of view: the more a society is endowed of skilled workers specialised in the creative economy (the creative class), the higher will be the economic development of the so-called post-industrial cities. Indeed, one of the peculiarities of the creative industries is the generation of new knowledge and innovation through the exchange of ideas and cross-fertilization processes. Boschma and Fritsch (2009) study the geographical distribution of the creative class across seven countries in Europe and find a positive relationship between regional growth and different types of creative industries. Following Florida (2002) and Boschma and Fritsch (2009) approaches, Marrocu & Paci (2012) test the role of CCIs on regional TFP for several EU27 countries. Their findings confirm once again the importance of these industries to stimulate regional development, as far as they boost the demand for highly-educated workers, which show higher rates of production and diffusion of new ideas, innovations, and knowledge. Focusing on the Italian case, Antonietti (2015) investigates the effects of knowledge externalities on innovation performance in the creative industries and finds a positive relationship between creative employment and firm innovativeness. Therefore, from these studies emerge the importance not only of the cultural class, or the educational side of the workforce, but also the relevance of the regional context.

Connected to this location aspect, the literature highlights the role of creative clusters and creative local production systems, according to the specialisation of each CCI. These latter are typical structures which emerged both in Italy and Spain, and they combine the creative industry specialisation with a set of socio-territorial characteristics that ease the concentration of these sectors in one specific context (Lazzarotti, Boix, & Capone, 2008). The authors assist to a concentration of creative industries in these areas,



but also to a geographical polarization of these clusters based on the degree of technological specialisation of sectors, both in Italy and Spain. This geographical division has been documented also in the paper by Bertacchini and Borrione (2013) for Italian creative industries. CCIs tend to be geographically distributed in clusters, considering their specialisation between: content and service-based creative industries, typical of large cities in the North of the country; and craft-based production, more related to the traditional sectors, located both in the South of Italy, but, at the same time, closer to high innovative areas in the North, to increase the complexity of the craft-based products.

From this strand of literature emerges not only the relevance of the location aspect, but also the specialisation or diversification of the cultural industries per se.

The diversity/variety framework has been highly stressed by the Evolutionary Economic Geography (EEG) scholars, as it represents one of the most important determinants for local growth and innovation. CCIs and sector variety are highlighted in the work of Innocenti and Lazzeretti (2019). They test the relatedness of products in the creative industries connected to the clustering of activities. Their findings on Italian industries revealed that relatedness play a positive role on employment growth, while this is not the case for clustering, and therefore for geographical proximity. Close to the concept of related variety (Frenken, Van Oort, & Verburg, 2007), another measure for country's specialisation has been recently introduced by the EEG scholars, that is the Economic Complexity Index (Hidalgo & Hausmann, 2009). Complexity, in the original framework, arises as the combination of two characteristics: the diversity of a country's product/export portfolio and the ubiquity of a product, which increases the lower is the number of countries producing or exporting that product (Balland & Rigby, 2017). The underlying mechanism is that countries differ in their level of economic complexity, and development, because they are endowed with different sets of skills and capabilities, where they show a revealed comparative advantage. Given the nature of this index, it accounts both for the location and for the specialisation of different products in an economy, and it could be considered as a good proxy for the analysis of geographical and industrial characteristics of CCIs. However, due to the novelty of this index, to best of my knowledge, there are no studies applying this measure yet.

This paper intends to contribute to the literature on CCIs in two ways: it analyses productivity and profitability determinants of firms belonging to these industries, controlling also for regional factors in a multilevel perspective; it adds the indicator of economic complexity as a specialisation and localisation index, to understand the characteristics of those industries with higher levels of complexity.

The empirical analysis will be carried out on Italian data for the period 2009-2016. We use the AIDA - Bureau van Dijk database to collect firm level characteristics, such as: age, size, geographical location, industrial code; and financial measures, such as: value added, ROA, EBITDA. Among the firms in the database, we select those which industrial



code belongs to the classification of CCIs as proposed by the Guide to Eurostat culture statistics (2018), and we detect the macro-area of specialisation following Bertacchini and Borrione (2013). Descriptive statistics and visual maps will help us to understand the location of these firms along the Italian peninsula. We build the Economic Complexity Index (ECI) on the number of employees of CCIs. Data on the local workforce are extracted from ASIA (Archive of Italian Active Firms) database, which reports the number of employees up to 5-digit industry code. Having the ECI based on the workforce better explains the level of specialisation and concentration of workers in the creative sectors. For the regional characteristics, we control for ECI computed on all sectors, and regional specialisation using the Herfindahl–Hirschman Index (HHI). Moreover, we add trade openness and population density as possible confounding factors.

Economic complexity of CCIs positively affects our dependent variable, as far as complex and innovative regions stimulate technological spillovers fostering firm's economic performance.

Keywords: Creative and Cultural Industries; Firm Performance; Economic Complexity.



The effect of advanced manufacturing technologies on occupations, skills and tasks in the Emilia-Romagna region

Roberto Antoniotti. “Marco Fanno” Department of Economics and Management. University of Padova. roberto.antoniotti@unipd.it

Luca Cattani. Department of Social & Political Sciences. University of Bologna. luca.cattani@unibo.it

Francesca Gambarotto. “Marco Fanno” Department of Economics and Management. University of Padova. francesca.gambarotto@unipd.it

Giulio Pedrini. Faculty of Economics and Law. Kore University of Enna. giulio.pedrini@unikore.it

Abstract

During the last decade, the economic literature has depicted different and heterogeneous scenarios with reference to the effects of the so called “fourth industrial revolution” on employment structures (Brynjolfsson and McAfee, 2014; Frey and Osborne, 2017; Gilchrist, 2016; Nedelkoska and Quintini, 2018). Now, the release of recent data referring to the period following the adoption of Industry 4.0 in most European countries allows robust empirical analyses on the actual effects of Industry 4.0 on labour demand in different productive and regional contexts (Evangelista et al., 2014).

Within this framework, one interesting field of investigation concerns the effects of Industry 4.0 on regional occupational structures and the related implications for skills development. It is widely argued that Industry 4.0 technologies will lead to a major shift in skill demand due to both the change in the occupational composition of the labour force (between-occupation effect) and the need for new skills or a change in the relative skill composition in certain job categories (within-occupation effect).

This paper investigates the effect of the adoption of advanced manufacturing technologies (AMT) on the skill and task content of occupational profiles in the Emilia-Romagna Region of Italy. The empirical analysis relies on data from the Sistema Informativo Lavoro – Emilia-Romagna (SILER), consisting in administrative Linked Employers-Employees microData (LEED). Such a system encompasses all occurrences concerning a job position (hiring, firing, conversion and fixed-term contract prolonged duration) at the firm-level between 2008 and 2017. This dataset is merged with (i) patent applications (to the EPO) in AMT and other key-enabling technologies at NUTS 3 regional level as retrieved from the OECD REGPAT database, (ii) the AIDA dataset provided by Bureau Van Dijk and providing balance sheet information on all the firms under investigation, and (iii) a national survey on professions which provides information on the tasks and skills underlying all the occupations in Italy (INAPP-ISTAT Survey carried on in 2007 and 2013).



With these data we estimate the relationship between new patents applications in AMT and the task and skill content of different occupations, classified at 3-digit level following the ISCO classification, using a widely recognized task-based taxonomy (e.g. Autor and Dorn, 2013). Specifically, we estimate which types of occupation are more frequently demanded by firms located in regions characterized by a higher intensity of AMT adoption (between-occupation effect), and, by occupation (within-occupation effect), which tasks (based on their degree of routinization) and skills (based on specific classifications provided by the OECD and by the Institute of Employment Research at Warwick University).

Keywords: industry 4.0, advanced manufacturing technologies, occupations, skills, tasks



The Revenge of the kimono cluster: pathways to revitalize the cultural heritage through digitalization

*Tamane Ozeki. Osaka City University
Silvia Rita Sedita. University of Padova*

Abstract

Cultural institutions need to undertake and consolidate an innovation process to which digital technologies can give a propulsive boost. Thanks to ICTs, designers can rethink and develop cultural heritage fruition projects to be more “for” and “with” users originating from different niches/ stakeholders, thus creating a participatory process of mutual exchange and growth. The digitalization of cultural heritage is crucial to revamp creative and cultural sectors that live a period of stagnation. This work is about the revitalization of the Kyoto kimono cluster through digitalisation, which initiated a new development path for a declining cluster. A growing community of economic geographers and regional scientists has debated on regional development based on related variety and regional branching, focusing mainly on regional diversification patterns. New path development and cluster evolution have been important subjects of analysis, and a taxonomy of new path development has been created. In particular, path renewal involves the growth of new activities and new industries via regional branching: existing knowledge and skills in a region are combined in new ways and may be linked to relevant, extra-regional knowledge to provide new knowledge for a region that enables innovations and entrepreneurship. The process encompasses intentional and purposive as well as serendipitous actions of individual entrepreneurs (firm-level) and networks of systemic configurations (cluster-level). A multi-scalar differentiated knowledge base (DKB) approach is used to capture path renewal dynamics in the Kyoto kimono cluster.

Keywords: Cultural heritage, path renewal, cluster



Environmental commitment, institutions and cluster effects

Belso-Martínez, Jose Antonio. jbelso@umh.es

Díez-Vial, Isabel. idiezvia@ucm.es

Martín-de-Castro, Gregorio. gmartinc@ccee.ucm.es

Abstract

It has been generally accepted that environmental practices are faster spread inside cluster because most of these agents involved are in proximity (clients, providers, competitors, local associations, etc), which increases face-to-face interactions, direct observation, along with informal meetings. This context foster “the capacity to identify opportunities, supply leaders, recruit participants, craft mobilizing action frames, and fashion new identities, tasks essential to sustained mobilization” (Polletta, 1999:8). Moreover, this interactive proximity allows them to create new agreements often through intense struggles, negotiations and bargaining, or through collaborative efforts to solve problems (van Wijk et al., 2019). It is at this cluster level that the main agents involved interact and frame the new opportunities derived from incorporating environmental practices (Lund-Thomsen and Nadvi, 2010).

In many cases, behind this positive effect of proximity on developing new environmental practices lies the necessity of exchange tacit knowledge between those different agents involved (Vachon and Klassen, 2006). If most of the relevant knowledge is tacit, then the transfer of knowledge between organizations is difficult and firms need to develop specific local networks (Cainelli et al., 2012). This knowledge exchange is accentuated by the interest of local firms in learning from their local competitors. As Porter (1998) has pointed out, inside firms tend to have stronger competition as they tend to focus more o those rivals that are that are at distance. The presence in the cluster of firms that are undertaking environmental practices is an stimuli to imitate these practices as long as they need to preserve relationships with existing customers, suppliers and other stakeholders (Campbell, 2007).

Also, inside clusters employees have higher mobility between companies, favouring the diffusion of environmental practices between companies (González-Masip et al., 2019). Clusters tend to attract high qualified and specialized employees because there are multiple alternative companies to work on in a related field (McCann and Folta, 2008). Based on the same reason, once they are installed in the community they find it easier to move from one firm to another taking their knowledge and experiences to other firms (Husted et al., 2016).



Finally, the cluster understood as a community of practice, an “organizational field” (Scott, 1985), that is, “those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies and other organizations that produce similar services and products” (DiMaggio and Powell, 1983). By different norms, rules, values, expectations and ideal references shared by its members, the local community established the level expected level and characteristics of social and ecological practices undertaken (Hoffman, 1999; Scott, 1995). Moreover, it is in this local community where most of the stakeholders to be considered are: most employees, clients, community and institutions tend to reside in the same location as the firms that have relationships with them (Marquis et al., 2007).

Although its relevance, to date, scarce research has been conducted on eco-innovation, environmental sustainability and industrial clusters (Battaglia et al., 2010; Martínez-del-Río and Céspedes-Lorente, 2014; Puppim de Oliveira and Jabbour, 2017). In view of this research gap, we aim to explore the drivers, barriers and effects of the firm's environmental commitment in clusters. Particularly, we delve into the mechanisms through which co-located SMEs foster their environmental-related practices.

Specifically, we extend the theoretical and empirical state of the art by analyzing how systemic factors may shape environmental practices in the region of Alicante. In this vein, we overcome the traditional focus on intra-firm drivers of environmental practices by considering factors related to the local network in which the firm is embedded.

Micro-level data on 175 Spanish footwear firms during 2018 allow us to test the following theoretical expectations like:

- a) the intensity of social-based relationships with business associations is positively related to the development of environmental practices.
- b) the intensity of knowledge-based relationships with technological institutes is positively related to the development of environmental practices.
- c) Cluster characteristics may influence the effects of network relationships (social or knowledge).
- d) Corporate environmentalism driven by local factors is positively associated with firm performance.

Keywords: cluster effect, environmental, footwear



Social Innovation and Corporate Responsibility in Mature Clusters: The Role Leading Firms in Globalized Clusters.

José Antonio Belso-Martínez. Universidad Miguel Hernández.

Isabel Díez-Vial. Universidad Complutense de Madrid.

María José López Sánchez. Universidad Miguel Hernández.

Abstract

The Corporate Social Responsibility is recognized as the prevalent strategy through which firms engage in social innovation. By concentrating on CSR, scholars embark in a research journey in which social and environmental issues become blended into the business models, engendering strategic value. But CSR is a multilevel process where the territory and the characteristic of the firms, affect firms' involvement in CSR. Despite the relevance of the local context, research is extremely scarce. This paper aims to contribute to this line by testing theoretical constructs using fine-grain data on 175 Spanish footwear firms located clusters obtained during 2018.

Our findings reveal that co-location "per se" does not imply the successful implementation of CSR. Firms should present t solidness in terms of innovation related skills and resources to reap the benefits of location Moreover, firm's age represents an inhibitor of social innovation, raising concerns on the difficulties for the diffusion of these practices in traditional clusters. Finally, local firms operating in international markets are more prone to implement CSR as interactions outside the cluster make them aware of the value of these new business models, the importance of social and environmental aspects within the global value chain or for final customers.

Keywords: social reponsability, globalized cluster, footwear, social innovation



Challenging the “Made in” along Global Value Chains. Evidence from Italian Industrial District

Chiara Burlina. *Social Sciences and Urban Studies* Gran Sasso Science Institute - L'Aquila, Italy.
chiara.burlina@gssi.it ORCID ID: 0000-0002-1914-8772

Eleonora Di Maria. *Department of Economics and Management “Marco Fanno”* University of Padova, Padova, Italy. eleonora.dimaria@unipd.it

Abstract

The international organization of economic activities and specifically the location of manufacturing across countries through offshoring dynamics and global sourcing strategies has been progressively challenged by changes in the competitive scenario and institutional framework (Gereffi, 2018). GVC literature has explored how manufacturing activities are geographically dispersed according to the smile curve of value creation, by providing alternative forms of governance in this respect (Gereffi & Fernandez-stark, 2016; Gereffi, Humphrey, & Sturgeon, 2005; Mudambi, 2008; Shih, 1996). The smile curve explains how these activities are divided between developed and developing economies: all low value-added activities (such as assembly or other manufacturing activities) can be moved to low-wage and low-skilled countries, while high value-added activities (such as R&D, design and marketing) are located in high-skilled countries. Industrial districts as local manufacturing systems have been described as particularly important as contexts for new knowledge creation based on the capacity to leverage on local skills and learning process grounded in manufacturing processes to sustain innovation. Such distinctive cluster feature has justified cluster participations in GVC and upgrading dynamics both in developing, but also in advanced economies (Belussi, Caloffi, & Sedita, 2018; Giuliani & Rabellotti, 2018; Hervás-Oliver, Albors-Garrigos, Estelles-Miguel, & Boronat-Moll, 2018).

Recent studies on reshoring suggest in fact the need for reconsidering the distance between innovation and production activities and the opportunity to invest also in high-cost countries on manufacturing to sustain innovation and achieve value (Berger, 2013; Buciuni & Finotto, 2016; Fratocchi et al., 2016; Pisano & Shih, 2012). Studies on regionalization of GVC (Stöllinger, Hanzl-Weiss, Leitner, & Stehrer, 2018) also suggest that further transformation will occur in the combination between value generation and value appropriation linked to manufacturing activities and places where those activities are located.

Previous literature takes countries as the investigation unit of the GVC. However, micro-level analysis related to firms and their geographical agglomeration in industrial district (ID) and clusters is taking part of the current economic debate. Several studies report the role of clusters according to their location in advanced or lagging economies



(Giuliani & Rabellotti, 2017); others emphasise the positive effects on the cluster's life cycle by being included in a GVC (Belussi et al., 2018).

Our analysis is focused on how the dynamics related to GVC at country level are represented also by Italian clusters, in particular those located in the Veneto region, and how much value can be produced by manufacturing district firms within the framework of GVC. Veneto is the second region in Italy for the amount of exports related to district firms, with an increasing trend started in 2010 (Intesa San Paolo, 2010). Moreover, this area shows a high concentration of industries specialising in the Made in Italy sectors, and it has strong relevance at both the national and international levels (Bettiol, Burlina, Chiarvesio, & Di Maria, 2018). We selected three out of five Made in Italy industries—fashion, furniture and machinery (Fortis, 2005)—as they account for the main sources of the Italian competitive advantage and are recognised worldwide as the best of the country's production processes (Bucci, Codeluppi, & Ferraresi, 2011). Thus, it could be an interesting case to investigate whether the organisation of the GVC at the national level is reflected also at the district level and how the regionalisation dynamics of the GVC emerge across different districts and the link with value generation.

The vast majority of information for GVC studies comes from secondary data exploring import–export dynamics, in particular from the Trade in Value Added (TiVA) and World Integrated Trade Solution (WITS)(OECD, 2018) for country-level, and the Intesa San Paolo reports for Italian and Veneto IDs (Intesa San Paolo, 2010, 2019). The novelty of the present paper is to combine these data with a survey on ID manufacturing firms located in Veneto, carried out in 2016 and merged with firms' value added extracted from Aida Bureau van Dijk database. The survey collects information of export and internationalisation strategies for firms belonging to the furniture district in Treviso, the fashion district in Riviera del Brenta (shoes) and eyewear in Belluno, and the mechanics district in Vicenza.

Having both the macro-level analysis (through TiVA and WITS databases) and micro-level (surveys and reports) of investigation will help us to better understand the dynamics of GVC and the relocation of production in some of the most important sectors of the Italian economy, to prevent future economic shocks and anticipate the movements of trade flows.

Keywords: Global Value Chain, Industrial District; Export Selected Theme: 2. Multinationals, clusters and global value chain



Toward system-based models of universities: a cluster analysis based on Italian data

Letizia Donati. University of Trento. letizia.donati@unitn.it

Abstract

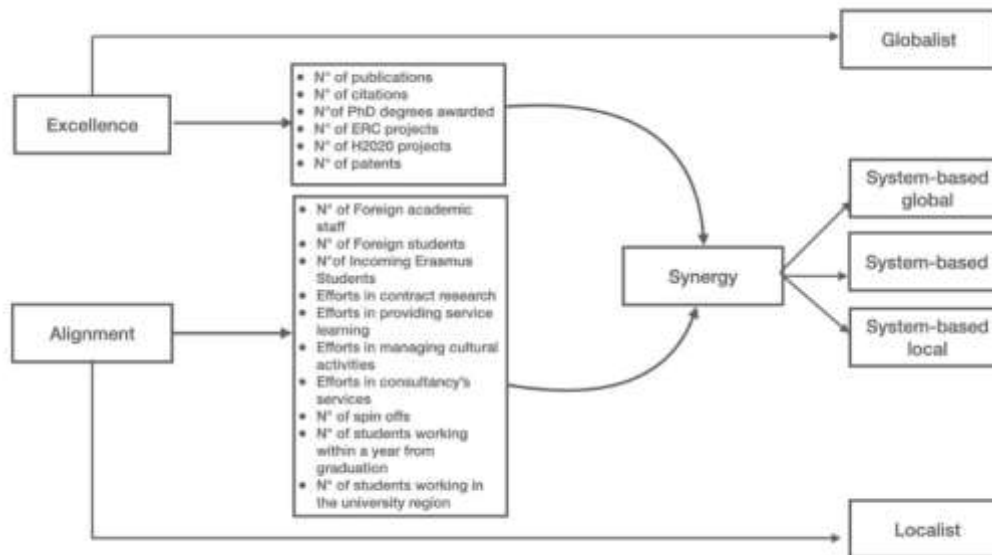
Starting from the Seventies of the 20th century, Higher Education Institution (HEIs in what follows) of advanced economies have started a profound process of change leading to the institutionalisation of a third mission besides research and teaching, aiming at stronger university-industry relations (Geuna and Muscio, 2009) and enhanced valorisation of research results toward the outside society (Molas-Gallart and Castro-Martinez, 2007).

Universities have always interacted with industry (Geuna and Muscio, 2009) and their contribution to economic development has been recognized to play an impactful role at local level, through various channels such as spill over effects on knowledge (Anselin et al., 2000) and the production of human capital (Goldstein, 2010). However, the acknowledgement of their role as innovation and knowledge producers in the knowledge economy (Bagchi-Sen and Lowton Smith, 2012) has given impetus to a change of pass in the reform of both university strategies and governance models (Laredo, 2007).

In the Nineties, such process pushed universities toward an entrepreneurial “turn” (Goldstein, 2010; D’Este and Perkmann, 2011) through technology transfer and commercialisation activities, which attracted major attention from both scholars and policy makers in that period. Intermediary organizations, such as Technology Transfer Offices (TTOs), university incubators and science parks were created to explicitly manage and support these kind of tasks (Geuna and Muscio, 2009), which included among others patenting, licensing and the creation of university spin offs (Bercovitz and Feldman, 2006).

Recently, the spectrum of activities falling under university third mission has been enlarged also to contract and collaborative research, consulting (Perkmann et al., 2013) and community engagement practices, such as service learning and community-based research (Vargiu, 2014). It is worth noting that depending on the strategies adopted by HEIs in pursuing third mission objectives, several university models have emerged: the entrepreneurial university (Etzkowitz et al., 2000), the University Research Centric District (URCD) (Patton and Kenney, 2009), the engaged (Breznitz and Feldman, 2012) and the civic university (Goddard et al., 2016). These models imply different approaches toward university territorial engagement and can have different impact on local

Figure 1: Conceptual framework



Since this is a work in progress the next steps of the work are the following: firstly, through a factor analysis it will be verified if the chosen variables consistently represent the concepts of Synergy, Alignment and Excellence; secondly, by performing a cluster analysis it will be assessed whether different combination of the variables contribute to the creation of different groups of universities. This will allow to advance the debate concerning how different universities strategies and models may exert a positive impact on innovation and local development through several outputs, which are not only confined to the technology transfer domain (e.g. spin offs and patents) but include a wider set of third mission interactions.

Keywords: university engagement; local development; knowledge transfer; university models



Winner and loser regions: An analysis of business relocation in Spain

Enrique Claver-Cortés; Universidad de Alicante; enrique.claver@ua.es

Bartolomé Marco-Lajara; Universidad de Alicante; bartolome.marco@ua.es

Pedro Seva-Larrosa; Universidad de Alicante; pedro.seva@ua.es

Lorena Ruiz-Fernández; Universidad de Alicante; lorena.fernandez@ua.es

Francisco García-Lillo; Universidad de Alicante; f.garcia@ua.es

Abstract

Business populations, as occur with human populations, change and evolve over time, thus configuring different territorial demographics. As Kronenberg (2013) points out, the economic landscape of the territories is shaped by the appearance or birth of new companies and their subsequent growth or disappearance, meanwhile these processes are intertwined with the redistribution of economic activity due to the relocation of companies. Therefore, it is a common phenomenon, and it is increasingly, that companies modify their location from one territory to another in search of more favorable conditions to develop their activity, either in purely economic or strategic terms. These business movements can be analyzed from the international perspective (international business research), when the destination is a foreign country or, from the regional perspective (regional science) when the destination is another region within the same country.

The objective of this research is to analyze the regional costs derived from the relocation decision of the companies in terms of business demography and turnover. In that sense, we try to answer the following questions: Is corporate relocation a stable phenomenon in Spain in recent years? Or, on the contrary, does it tend to increase? Are there differences between regions in terms of corporate relocation? In other words, are there more dynamic regions, in which the entry and exit of companies is greater than in others? Which Spanish regions benefit most from the relocation/migration of companies? Can we talk about winner and loser regions when considering the loss/gain in terms of number of companies and turnover?

Keywords: Business relocation, demography of firms, regional costs



Do Innovation hubs matter for industrial transition? Innovation Policies in a transforming economy. The case of Piedmont Region.

Filomena Berardi, “Ires Piemonte” berardi@ires.piemonte.it
Daniela Nepote. “Ires Piemonte”

Abstract

Innovation has a prominent role in Europe’s efforts to tackle major societal and environmental challenges. Cluster policies have played a pivotal role within innovation policies generated in Europe.

Within the EU Cohesion policy framework, Regions have identified their S3 priorities based on the ‘*Entrepreneurial Discovery Process*’ in order to understand and learn about their regional capacities, potential, opportunities and weaknesses; as well as for mapping local participants, their activities and markets.

Clusters act as innovation facilitators for the local players and have a key role in regional economy by stimulating the flows of ideas and supporting projects and investments.

Piedmont has been the first Italian region to formally set up, in 2009, the *Cluster Organizations* on its territory, in the form of legal entities, that support the strengthening of networking among SMEs and provide customized business support, within the EU Cohesion Policy Framework. Along the *Cluster Organizations*, the Region composed a set of specific policy interventions with the goal to anchor them in a policy framework: the *Piedmonts’ cluster policies* consist in specific support instruments, given to SMEs in order to pursue research and development activities in interaction between various actors.

The Clusters operating within the Region have been active for more than 10 years. The Piedmont region can boast a level of expenditure in Research and Development above the national average. However, this does not translate entirely in innovation.

According to the Regional Innovation Scoreboard Piedmont is profiled as a ‘Moderate Plus’ innovator hence the need for further analysis into the articulation and functioning of the innovation eco-system. Policy makers have outlined their quest to revitalize traditional sectors, supporting added value activities and to foster technological transition notably regarding the energy sector and the digitalization of the economy.

Building upon the classification of Piedmont as Region in industrial Transition (European Commission, 2019), this paper presents the way SMEs, that are managed by



the Piedmonts Cluster Organizations, have responded to the challenges posed by ongoing transformations and if the support measures put forward by the Piedmont Region, through the Cluster Policies adopted, have helped to infuse more dynamism in the regional economy.

Within this framework policy the concentration of resources for the co-financing of R&D is intended to favor the emergence of the new industrial value chain: the funded activities are expected to be coherent with the technological domains intersected by Smart Specialization Strategy, and therefore to favor their development. In fact, according to many scholars (Zhelev, 2014; Saha, 2018) the role of smart specialization strategy (S3) in making clusters a major driver of enhancing regional innovation and competitiveness is due to the strategic approach to territorial economic development adopted, through targeted support to research and innovation.

Moreover, the cluster policies adopted is understood as an interactive learning process that is socially and territorially embedded and culturally and institutionally contextualized (Lundvall, 1992). The cooperative effort that must be put in place for the realization of cooperative projects demanded by the competitive procedures, aims to the creation of networks which allow for knowledge to circulate through specific channels. From this perspective, innovation outcomes are influenced by the quantity and quality of cooperation between the institutions in the network (Radicic, 2018). This is consistent with numerous findings, that many studies have highlighted, about innovation not being the by-product of an exogenous change but as emerging from endogenous learning process taking place within a particular production systems organized in space and time (Jeannerat, Kebir 2013).

The 7 clusters operating nowadays within the Piedmont region seem tailor made to reinforce territorial cohesion and consolidate the local dimension. Despite a modest participation, the cluster covers on average the 6% of the existing companies in the sector, and these companies have benefited from the participation to the cluster activities. According to an evaluation exercise undertaken by *Ires Piemonte* (2018), participation in Clusters have enabled companies to have a better turnover (+4%), capture new market opportunities and expand their customer base.

The impact on civil society and the benefits of the eco system created by clusters have taken various forms including: the development of projects and practices targeting vulnerable people and communities, more efficient methods to gather citizen's expectations, solutions and services tailored to citizen's needs with the production of cost efficient goods and services, and schemes supporting civil society's development projects.

Nevertheless, further investigation is needed to identify with more accuracy the ways these projects have responded to known societal needs.



In fact, the limit of numerous studies run so far rely on a qualitative analysis; that is to evaluate the impact of hubs/consortium/parks/districts on performance of belonging firms from the inside, without the possibility of a counterfactual analysis that compares the results obtained by settled firms with those of similar characteristics located elsewhere.

Studies adopting a counterfactual approach in relation to space based policies are yet not numerous, although are slightly increasing. Pursuing with this type of approach, Caloffi et al (2017) investigates different types of network additionality revealing that R&D collaboration policies, within Tuscany Region, has been able to generate some persistent changes in the networking behavior of participant firms. Similarly, Massarutto et al (2019) exploits an unprecedented database, built through geo-referentiation, which allows to distinguish firms that are located in areas served by consortia. Therefore, the authors compare the performance of the firms located in industrial parks with that of other firms at the national and regional scale.

In our analysis, we aim to present the results of an evaluation effort collected for assessing the impact of this policy intervention, adopting a counterfactual approach, by comparing the performance of targeted firms with that of other firms located in the same Region that are not part of any cluster, hence did not receive public funding.

For the purpose of estimating the effect of the participation of the policy intervention, it has been chosen to compare associated companies' performance to that of a control group, measured before and after the policy intervention. In order to build the control group, an extensive use of financial-economic data have been taken into analysis, relying on AIDA database, with data ranging from 2000 to 2018.

Additionally, we will use the data derived from a questionnaire that is filled out by treated companies and by those from the control group. Performance indicators derived from the questionnaire are supposed to be better tied to the policy's objectives.

We will, therefore, discuss the results in light of the in light of the wider objectives posed by the challenge of the industrial transition. Overcoming dualism, up-taking industry 4.0 are among them.

Last, but not least, the need to transform the regional innovation hubs into fully-fledged tools for the achievement of the objectives of the regional smart specialization strategy.

Beyond the full impact of cluster policies, it should be acknowledged that the region has benefited from the policy framework. It has consolidated an existing innovation system and has brought on new dynamic innovation policies and instruments to boost the regional economy.



Cluster policies has opened up to a new paradigm based on an inclusive collaborative approach whereby stakeholders are encouraged to develop high added value products and services in well-established or new key activities. This may allow companies to get access to a wider business and innovation system networks.

Keywords: innovation policies, industrial transition, cross-sectoral fertilization, cohesion policies, networking behaviour, local development



Structuring multi-level identities in clusters: The Brazilian wine-making region “Serra-Gaúcha”

Cristina Boari. University of Bologna. cristina.boari@unibo.it

Andrea Carlo Lo Verso. University of Bologna. andreacarlo.loverso2@unibo.it

Aurora Carneiro Zen. Universidade Federal do Rio Grande do Sul. aurora.zen@ufrgs.br

Abstract

Introduction and Research Question

Research is long since aware that a collective identity has a significant impact on performance, survival rate, and competitive advantage of firms located in industrial clusters (Romanelli & Khessina, 2005; Sammarra & Biggiero, 2001; Staber & Sautter, 2011). An industry or cluster level identity works in fact as a perceptual focus (McKendrick, Jaffee, Carroll, & Khessina, 2003) thanks to which resourceful audiences can recognize and accordingly give economic support and status to the firms within it. Clusters, however, are typically articulated in multiple levels and embedded within broader national and institutional contexts. Studies on organizational identity propose that these multilayered organizational settings are characterized by “nested identities” (Ashforth & Johnson, 2001; Ashforth, Rogers, & Corley, 2011), in which low-level identities (e.g., the identity of a physician) and high-level identities (e.g., the identity of the cardiology department and of the whole hospital) usually are mutually related (Irwin, Lahneman, & Parmigiani, 2018) and consistent, creating a shared sense of purpose (Ashforth et al., 2011).

This cross-level consistency is typically visible in well-developed clusters where meanings are settled, and individual organizations look for optimal distinctiveness (Garud, Lant, & Schildt, 2019). Other contexts may instead be less stabilized, and actors must strive for building an identity to meet audiences’ expectations and ultimately achieve performance improvements. Therefore, we aim at exploring how multiple identity levels interface with one another in the absence of stable and taken-for-granted understandings.

In the wine industry, identity-based dynamics are prominent because of the cultural values and symbolisms associated with this product and the related practices (Croidieu & Monin, 2010; Massa, Helms, Voronov, & Wang, 2017; Patchell, 2008); additionally, wineries are often grouped in clusters typically located in circumscribed regions (Giuliani, 2013). In this kind of contexts, audiences such as critics and arbiters of taste play a key role in the definition of an industry’s identity (DiMaggio, 1987; Rao, Monin, & Durand, 2003; Romanelli & Khessina, 2005). Indeed, the identity construction process happens at the interface between internal players who project an image of their



industry and these audiences that may grant such identity if aligned with their own perceptions of what is legitimate and appropriate. These processes are typically driven by discursive endeavors which are exerted both on the supply-side and on the audience-side (Hsu & Hannan, 2005; Jha & Beckman, 2017; Khaire, 2014). The research question we ask is thus: How the audience and the supply side discourses frame the discrepancies or concordances between multiple levels through the identity definition process of an industry?

For our analysis, we rely on textual data coming from multiple sources over a 13-year time span (2005-2018) regarding the relatively young and underdeveloped Brazilian fine-wine industry, with particular focus on the Serra Gaúcha cluster (which accounts for 90% of total wine production in the country). Adopting an interpretative approach assisted by computational topic analysis (Hannigan et al., 2019; Nelson, 2020), we show that the identity-building efforts are characterized by a several inconsistencies between levels which indicate the unsettled state of the Brazilian industry.

We contribute to the literature on cultural clusters by discussing how discrepancies among different identity levels imply critical challenges for firms and institutional actors who aim at the development of the industry but cannot take advantage of clear-cut identities by balancing distinctiveness and conformity (Zuckerman, 2016).

Keywords: Cluster identity, wine sector, topic modeling



The Industrial Symbiosis as a Trigger of the Localised Spillovers in an Industrial Park

César Camisón. Universitat de València. Spain.

Beatriz Forés. Universitat Jaume I. Spain.

José María Fernández-Yáñez. Universitat Jaume I. Spain.

Abstract

Industrial parks, unlike industrial districts, are infrastructures generally promoted by national or regional government bodies in order to improve, among other objectives, regional development or employment. This model, due to its own idiosyncrasy, is characterized by the absence of the externalities so distinctive of industrial districts. This fact, together with the neglect that these infrastructures have received by the public administrations, has plunged them into serious processes of degradation and obsolescence. The Circular Economy approach and, in particular, its linked processes of industrial symbiosis are presented as a mechanism capable of promoting the regeneration of industrial parks, by encouraging the generation of positive environmental and social externalities and the establishment of networks between companies which, in the final analysis, enhance the generation of localised spillovers which had been absent until then in these models of business agglomeration.

Keywords: industrial parks, industrial districts, industrial symbiosis & circular economy.



Towards Smart Cluster Policy in the V4 Countries

Lukáš Danko, Univerzita Tomáše Bati ve Zlíně, danko@utb.cz

Drahomíra Pavelková, Univerzita Tomáše Bati ve Zlíně, pavelkova@utb.cz

Pavel Bednář, Univerzita Tomáše Bati ve Zlíně, bednar@utb.cz

Abstract

The main objective of the paper is to deliver the relevant message to cluster stakeholders and policy-makers to streamline the cluster policy in the V4 countries from just a policy to a place-based policy, from a partial cluster concept oriented to a more holistic and consistent view, from separate and incompatible to smart and strong cluster policy. Furthermore, the paper aims to provide an insight into specifics of cluster policies in the V4 countries. Moreover, the purpose of the research is to define, which interventions and policy implications are relevant to step towards smart cluster policy in terms of rethinking cluster development in the technological era. In addition, the V4 countries have been developing their national cluster strategies individually, which limits the opportunity to create synergies and links with socioeconomic development in the Central Europe. Thus, the paper emphasizes the need for differentiated regional innovation policy approach towards clusters with regional specifics that affect both regional and national stakeholders and their involvement in policy making. Smart cluster policies should reflect on this point as “one size fits all” is scarcely functional, especially with the focus on rethinking clusters. The paper presents principles of smart governance into regional innovation systems and interlink them with efforts towards smart cluster policies. In order to achieve objectives of the empirical study, the paper is based on the literature review of sources concerning cluster policies and smart governance in order to highlight synergies in cluster development in the technological era.

Keywords: clusters, cluster policy, smart governance, place-based policy, Visegrad four.



Environmental Sustainability in Clusters: More than Inevitable Cost to be Incurred?

F. Xavier Molina-Morales. Universitat Jaume I de Castelló. molina@uji.es
Luís Martínez-Cháfer. Universitat Jaume I de Castelló. chafer@uji.es

Abstract

Recently, companies started to proactively act on environmental sustainability. Reasons behind this change are diverse and come from different spheres. Market pressures, adjustments in the environmental regulation by governmental agencies or modifications on the corporate social responsibility dynamics are frequently mentioned (Bird et al., 2007, Albort-Morant et al., 2016). It could be said that companies have discovered that green strategies and innovations can become a determinant of competitive advantage (Nerurkar, 2015).

In spite of the recent increasing number of publications on the topic, most of the studies are single-company cases and rarely are focusing on territorial contexts of intensive relationships among firms and other interconnected actors, as an industrial cluster can represent. We aim to build the theoretical bases to explicate how organizational support organizations, institutional set-ups and companies are transformed to face the environmental challenges.

In this research effort, we have used the Spanish ceramic tile cluster to illustrate the complex and diverse elements that green transformation involves. In order to do, we describe environmental challenges affecting to the cluster, the responses to those challenges and the opportunities the green innovations open.

We have structured the paper as follows. First, we explain the theoretical development including the sustainability basic key concepts and the territorial and social cluster perspective. Then we applied this frame to the case of the ceramic tile cluster, discussing alternatives, threats and possibilities.

Keywords: Sustainability, green innovation, cluster, ceramic tile.



Rethinking the literature on clusters: contemporary debates, active research fronts, and agenda for future research

Francisco García-Lillo. Department of Management, University of Alicante. f.garcia@ua.es

Enrique Claver-Cortés. Department of Management, University of Alicante.

Bartolomé Marco-Lajara. Department of Management, University of Alicante.

Pedro Seva-Larrosa. Department of Management, University of Alicante.

Javier Martínez-Falcó. Department of Management, University of Alicante.

Abstract

In recent years, author and document citation and co-citation analyses have often been applied to map the intellectual structure or knowledge base of different scientific fields, including the literature on clusters, industrial districts, local systems, and territorial innovation models (TIMs) (Doloreux et al., 2019; García-Lillo et al., 2017; Lazzeretti et al., 2019; Lazzeretti, Sedita & Caloffi, 2014; Sedita, Caloffi & Lazzeretti, 2018). However, the technique of *bibliographic coupling* between scientific documents (Kessler, 1963), which seeks to identify active research fronts in a scientific field or discipline – and, particularly suitable for detecting current trends and future research priorities – has been less commonly used. This study utilized this last technique to identify and visualize active research fronts in the context of recent peer-reviewed journal articles on *clusters and local employment systems* published in a wide variety of journals from 2017 to 2020* seeking to shed light on the current *state-of-the-art* –high quality, thematic review papers, bibliographic, and meta-analyses can provide this *state-of-the-art* understanding to scholars and thus play an important role in a discipline’s progress (Frank & Hatak, 2014; Jones & Gatrell, 2014; Palmatier, Houston & Hullund, 2018; amongst other). The aim is not only to complement and expand the results obtained in prior studies that have used other types of systematization, such as qualitative content analysis methodology, but also to propose new avenues for future research.

As a novelty, *Bibliometrix*, an R-tool designed by Aria & Cuccurullo (2017) to perform bibliometric analyses was also used. The *bibliometrix* R-package (<http://www.bibliometrix.org>) provides a set of tools for quantitative research in bibliometrics and scientometrics. It is written in the R language, which is an open-source environment and ecosystem. The existence of substantial, effective statistical algorithms, access to high-quality numerical routines, and integrated data visualization tools are perhaps the strongest qualities to prefer R to other languages for scientific computation.

Figures 1*, 2*, 3*, and 4* (see, Annex 1) show only a part of the output that can be obtained using *Bibliometrix*. This is the *Co-occurrence network of keywords plus*, a



Three-Fields Plot considering for example authors, countries and affiliations, a *WordCloud of keywords plus*, and finally a *Country Scientific Production map*.

In relation to the data, the “source-documents” utilized in this study were retrieved from the Web of Science™ (WoS) Core Collection (CC). From this database (in particular, two of its indexes: the Social Sciences Citation Index; and the Emerging Sources Citation Index), a total of 375 peer-reviewed journal articles published in up to 194 different journals between 2017 and January 30, 2020 were retrieved.

Only “peer-reviewed journal articles,” i.e. research papers, rather than books, doctoral dissertations, or papers containing reviews and proceedings, were considered in this research, since they are the only ones that can be regarded as “certified knowledge” (Merton, 1973) –the institutional goal of science is, in Merton’s (1973, p. 270) words, “the extension of certified knowledge.” Additionally, the use of citations from research papers constitutes standard practice adopted in the implementation of this type of analysis, increasing the reliability of the results obtained [the review process itself acts as a quality control mechanism that validates the knowledge such articles afford (Light & Pillemer, 1984; Ordanini et al., 2008)].

Keywords: clusters and local systems; literature review; bibliometrics; bibliographic coupling analysis (BCA); social network analysis (SNA); Bibliometrix.



Employment and income trajectories in productive clusters: an application for the Brazilian metal mechanical industrial complex

Jorge Britto – Fluminense Federal University - UFF – Brazil. britto.jorge@gmail.com

Lucas Teixeira Araújo – UFF /IDEIES-FINDES – Brazil. lucast_a@gmail.com

Abstract

The analysis deals with the spatial distribution of the metal mechanical industrial complex in the Brazilian territory with emphasis on the comparative analysis of the evolutionary trajectories of productive clusters in terms of employment and salaries' earnings. The methodology involves the previous identification of 71 productive clusters defined at the level of the geographical micro-regions, In order to deal with heterogeneity of those agglomerations, the analysis introduces the concept of "sectoral functions", which aims to determine the availability of knowledge and skills, defined as the amount of workers who are allocated by an ISCO-family and a particular ISIC subclass. The analysis comprises a shift-share decomposition, in order to measure how the inter-temporal changes in average wages reflect a general increase in the level of earnings or relevant changes in employment structure of those clusters. The analysis is schematically summarized through a “map” that defines eight positions, combining the two decomposition effects, with the axes defining the signs of wage and structural effects. The analysis is performed for three sub-periods – 2006-2010, 2010-2103 and 2013-2016 – with the changes of the positions of the clusters providing relevant clues about its evolution.

Key-words: Metal Mechanical Industrial Complex; Productive Clusters - Evolutionary Trajectory; Productive Clusters - Employment Structure



Knowledge Bases and Regional Development: an application of the "SAS Model" to the Brazilian Economy

*Jorge Britto - Fluminense Federal University (UFF) - Rio de Janeiro - Brazil.
britto.jorge@gmail.com*

Abstract

The subject of the analysis is the structure and the evolution of the ideal-types of "knowledge bases" defined from data about employment according to the SAS Model at the level of the Brazilian territorial units. The analysis seeks to identify the absolute and relative relevance of these knowledge bases in different territorial units (Geo-Economic Regions, Federative States and Geographical "Meso-regions"). as well as the evolution of these characteristics over a period of twelve years, in order to identify reinforcing or re-specialization patterns. As a result, we try to evaluate the distribution of the employment among different territorial units throughout the period investigated, considering the distinction between the three types of "Knowledge Bases" (Analytical, Synthetic and Symbolic), articulating this evolution to the socio-economic dynamism of the territory and identifying potential implications in the fields of regional development policies.

Keywords: SAS Model; Knowledge Bases; Territorial Redistribution of Employment



Regional Innovation Systems Under Pressure?

Judith Terstriep. Westphalian University, Institut for Work and Technology, Munscheidstr. 14, D-45886 Gelsenkirchen, terstriep@iat.eu

Dieter Rehfeld. Westphalian University, Institut for Work and Technology, Munscheidstr. 14, D-45886 Gelsenkirchen, rehfeld@iat.eu

Alessio Giustolisi. Westphalian University, Institut for Work and Technology, Munscheidstr. 14, D-45886 Gelsenkirchen, giustolisi@iat.eu

Abstract

Forming the starting point of the project »The future of regional innovation strategies in times of global transformations« (FutureRIS), the paper reflects on the question in how far global transformations affect hereto strong if not leading role of regions and regional innovation systems in the world economy. This in turn raises the question as to whether the concept of regional innovation will continue to be an appropriate framework for analysing the role von regions in recent and expected global transformations. It is hypothesised that trends in global transformations affects and reshapes the balances between competition, cooperation and hierarchy (power), challenges and economic frames that are grounded in innovation, knowledge and learning.

Keywords: regional innovation systems, globalization, value networks



The entry of MNEs in clusters. A comparative case in the ceramic industry between Italy and Spain

Fiorenza Belussi. University of Padova. Italy.

F. Xavier Molina-Morales. Universitat Jaume I. Spain.

Luis Martínez-Cháfer. Universitat Jaume I. Spain.

Abstract

The focus of this article concerns the analysis of the impact of MNEs entry in leading clusters. Our interest is to identify the role of global external actors, whose activity is interlinked with local cluster firms. This means to study the effect of MNEs entry, considering both, contracts and acquisitions (M&A) and green field FDI. Although the cluster model has often been described as locally self-contained, the empirical research has recently pointed out the increasing involvement of clusters in the process of internationalization (Storper, 1992, Belussi, 1996 and 2018; Malerba, 1993; Poudier and St. John, 1996).

The literature has shown that MNEs are often attracted to clusters. Following some authors, the entry of MNEs in clusters has given rise to a significant process of technological transfer between MNE subsidiaries and local firms (Dunning 1995, 1998 and 2000; Enright, 1998), thereby favoring cluster upgrading. However, other authors have been more cautious or critical (Bair & Gereffi, 2001; Lipsey, 2004). In fact, the role played by MNEs in clusters still requires further investigation.

Our analysis focuses on the impact of MNEs entry on the general process of cluster evolution, influencing the levels of cluster innovativeness. In order to carry out this research, we have analyzed two specific clusters, Castellón (Spain) and Sassuolo (Italy), both of them concentrated on the production of ceramic tiles, and globally technological leaders.

Keywords: MNEs, innovation; industrial clusters; technological innovation; clustered firms; ceramic industry.



Policy Influence in the Knowledge Space: a Regional Application

Stefano Basilio. Friedrich Schiller University Jena, Economics Department, stefano.basilico@uni-jena.de

Uwe Cantner. Friedrich Schiller University Jena, Economics Department.

Holger Graf. Friedrich Schiller University Jena, Economics Department.

Abstract

Cluster policies are a popular form of regional innovation policy, which has attracted a lot of research trying to understand its effects and consequences. Most of these studies focus on the outcomes for single firms and provide valuable information for academics and feedback for policy makers (Nishimura & Okamuro, 2011). Since actors with different characteristics compose a cluster, it is, however, a strong limitation to study only effects for one type of actor. One of the challenges for cluster policy evaluation methods is to have a comprehensive analysis that involves all components present in a regional system (Uyerra & Ramlogan, 2012). There are a few exceptions. Giuliani et al. (2016) and Töopfer et al. (2019) apply methods from social network analysis (SNA) to understand how policy affects the structure of relationships between different actors. In their recent study, Graf & Broekel (2020) use SNA to understand the short and long term impacts of BioRegio on actor networks in the winning clusters. They find limited effects of the cluster policy on cohesion during and after the funding period. To our knowledge, cluster policy effects on the technological structure (knowledge space) of a cluster have never been studied before.

One of the aims of cluster policies is to support collaboration between regionally bounded entities that share knowledge and social relations within the same industry. Hence, policy makers attempt to increase network cohesion with a more efficient distribution of knowledge (Boschma, 2005). Such newly created relations can affect the technological structure of a region. Take for example, a newly established collaboration between a firm focused on Optics and a Biotech company. With their shared knowledge and expertise, they might invent something completely new and decide to protect it with several patents. As a consequence, the two technologies that were never associated before (Optics and Biotechnology) may gain in importance in the technological network.

We use the concept of the Knowledge Space (KS) to gain insights on the technological development in a region. The KS is a structure of connections between technologies and is considered important for the accumulation and creation of knowledge (Kogler et al., 2013). Any particular space requires that activities of all actors present in the Regional Innovation System (RIS) are included in the analysis. The KS concept has been used for comparing the technological structure and evolution of RIS, particularly in

studies that focused on the United States (Kogler et al., 2013; Boschma et al., 2014; Balland et al., 2015). As yet, the KS concept has not been used to understand the effectiveness of a policy. The KS is a dynamic concept so that it is affected by activities within the innovation system. For example, the emergence of a new General Purpose Technology (GPT) (Graf, 2012) or a policy targeting a specific technology can transform the KS.

In order to analyse whether cluster policies reshape the KS and change its technological trajectory we focus on the German BioRegio Contest. This program was implemented when Germany was lagging behind the United Kingdom and United States in the development and commercialization of Biotechnology (Cooke, 2001). The German federal government and local authorities started to develop initiatives to try to close this gap; one of them was the BioRegio Contest (Dohse, 2000). There were 17 regions that applied for this program and four of them won the contest, these are: Jena, Munich, Rhineland (Cologne, Aachen, Düsseldorf and Wuppertal) and the Rhine-Neckar triangle (Heidelberg, Mannheim and Ludwigshafen). The program started in 1997 and finished in 2005 (Dohse, 2000). The main aim was to identify and strengthen clusters that were already performing well in Biotechnology.

The main motive of the BioRegio Contest was to foster collaborations with entrepreneurial and academic start-ups in the field of biotechnology and to combine biotech with other, previously unrelated technologies (Dohse, 2000; Dohse et al., 2008). The latter motive is an important aspect for our analysis since new combinations between different technological fields can change the shape of the KS. We look at such changes in order to evaluate the effectiveness of the BioRegio Contest in terms of its ability to influence innovation relevant structures.

We use PATSTAT, the International Patent Classification (IPC) and the [Schmoch \(2008\)](#) classification of technological fields to identify Biotechnology. We also use the standard OECD identification of classes defined as Biotechnology ([Van Beuzekom & Arundel, 2009](#)), this permits us to compare results with two different classification criteria (Schmoch and OECD). The considered time frame is between 1990 and 2010, to have enough time to analyse how the situation was before, during and after the policy measure. The nodes in the network are 4 digit IPC classes while the edges are patents that are co-classified between two or more IPC classes. A patent is attributed to a region if at least one of the inventors is located in that specific area. As cluster regions, we consider Labour Market Regions (LMR) that contain one of the cities identified as participant in the BioRegio contest. To reconstruct the KS of the 17 regions and to compare winner regions with the rest of the applicants, we use the Revealed Relatedness (RR) method. It is a probabilistic measure based on a comparison between expected and actual co-occurrences of two technologies ([Neffke & Henning, 2008](#)).



We use Betweenness Centrality (BC) to identify important technologies in the KS. The BC measures how many times a node in a network lies on the shortest path between all other technologies (Freeman, 1979). Starting from 1990 with 5-year moving windows and isolating the biotechnological fields we observe the evolution of Biotech in the all participating regions during and after the time when the policy was running. We expect that these technologies become more central and more connected to other fields in the KS. In a first set of regressions our treatment group is composed of all Biotech IPC classes (OECD or Schmoch) and the control group is composed of all the other classes. In a second set of regressions, we compare Biotech IPC classes across winning and non-winning regions to understand if BioRegio is the driver of Biotech development rather than a general trend.

As policy evaluation method we use the Difference in Differences (DiD) approach. As dependent variable we take the BC for all classes. As independent variables we use three dummies that are fundamental for the DiD approach, particularly: a time dummy to distinguish between the periods before, during and after the policy was running. A technological dummy that separates the technologies as Biotech (treatment group) from non Biotech technologies (control group) and an interaction term between the previous two. As control variables we use measures that take into account how many patents are classified within one IPC class and a dummy distinguishing between East and West German regions.

Our preliminary results show that the BioRegio contest contributed to an increase in the importance of Biotechnology in the four winning regions in terms of connectedness with other fields and importance in the KS. The effect is even higher after the policy ceased its funding period. Also, we find out that Biotechnology in winning regions have a higher growth rather than Biotechnology in the participating regions.

Keywords: Germany, BioRegio, knowledge space, cluster policy, patent



The role of creative hubs for place-based intercultural dialogue

Dr Marlen Komorowski. Senior Researcher, VUB and Impact Analyst, SMIT, Studies on Media, Information & Telecommunication. Vrije Universiteit Brussel and Clwstwr, JOMEC - School of Journalism, Media and Culture, Creative Economy Unit. Cardiff University. Komorowskim@cardiff.ac.uk / marlen.komorowski@vub.be

Professor Dr Justin Lewis. Academic Lead and Director, Clwstwr, JOMEC - School of Journalism, Media and Culture, Creative Economy Unit. Cardiff University.

Sara Pepper. Director of Creative Economy, Clwstwr, JOMEC - School of Journalism, Media and Culture, Creative Economy Unit. Cardiff University.

Abstract

The last decade has seen a significant increase globally in the number of creative hubs. A creative hub is a physical space formed by a creative cluster of agglomerated creative and cultural professionals that offers support for their growth, collaboration, interaction, and development. This can include cluster organisations, co-working spaces, studios, creative centres, networks, online platforms, or alternative places.¹ Investment from both public and private stakeholders has resulted in creative hubs developing in many cities and taking on roles to bring benefits to the places in which they are located as well as for the users for whom they are created. In addition, many post-industrial cities have experienced a shift to replace their former manufacturing and heavy industry activities with the production of new products, services, and ideas. This, in addition to cheaper rents and rates, has led to a number of creative hubs being located in more marginalised neighbourhoods and former manufacturing areas.

It has been acknowledged by policy makers that creative hubs have a positive economic impact. The overall discourse in academic research also supports this focussing in the main on the economic benefits increased productivity are highlighted. Michael Porter popularized through his book ‘The Competitive Advantage of Nations’ the concept that clustering of economic actors creates competitive advantages for the local economies.⁴ Based on this, much of the research on creative hubs to date has its roots in industry cluster research, which focuses on transaction costs and economic competitiveness.

In the past decade particularly, countries, cities and places have been facing significant and far reaching changes and challenges relating to cultural diversification. Globalisation, digitisation and ICT developments – particularly through the emergence of new communications technologies has brought spaces and people closer together than ever and has had a significant impact on society and cultural systems. The development of transport has also brought more people than ever into face-to-face contact. Additionally, the world faces a wide range of social challenges including the recent



migration crises for Europe, climate change obligations, economic inequalities, terrorism, military conflicts and more.

Intercultural dialogue in this context serves as a promoter of an inclusive society that can help to overcome and manage these challenges. Intercultural dialogue can be defined as constructive and positive interaction between people or groups of culturally different backgrounds. The Council of Europe in its 'White Paper on Intercultural Dialogue' highlights that intercultural dialogue is a powerful instrument of mediation and reconciliation: through critical and constructive engagement across cultural groups, it addresses real concerns about social fragmentation and insecurity while fostering integration and social cohesion. While the creation of intercultural dialogue has been recognised as important goal when creating an open society, there remains a lack in understanding about how to do. But it is widely recognised that it is the obligation of governments to constantly offer opportunities for such dialogue.

In this study, we bring together discussions about the societal challenges listed above and connect those with the impacts and potential of creative hubs in this context. We theorise that creative hubs can be platforms and enablers for intercultural dialogue and consequently positively impact our society. It has also been suggested - and this is a much-overlooked premise of creative hubs in research and in political discourse - that hubs can be used as a tool to create a number of social benefits. As a successful platform for intercultural dialogue is built the premise of social inclusion, boosting of local identities, generation of social-relations and community formation we argue that within this framework, creativity can be seen as an enabler for intercultural understanding and communication. Richard Florida highlighted already in his book 'The Rise of the Creative Class' that the essentials of creative cultures are defined by: talent, technology, and tolerance. Essential to this idea is that places in order to be creative need to invest in technology; attract young people and retain talents; and be open to diversity. Creative hubs should be therefore built on tolerance, diversity and interaction. But the underlying processes, connections and relationships that go inform, enable and connect creative hubs and hub members to wider civil society are not yet well understood. This study tries to fill this gap. *The overall aim is to provide analyse the relations of creative hubs to intercultural dialogue and highlight the role creative hubs can play for societal goals in the future.*

Keywords: Creative cluster; Creative hubs; Intercultural dialogue; Social cohesion



Wine industrial districts in Spain: an analysis from a historical perspective

Enrique Claver-Cortés; University of Alicante; enrique.claver@ua.es

Bartolomé Marco-Lajara; University of Alicante; bartolome.marco@ua.es

Pedro Seva-Larrosa; University of Alicante; pedro.seva@ua.es

Javier Martínez Falcó; University of Alicante; jmf51@alu.ua.es

Abstract

The Spanish agri-food industry combines maturity, the predominance of small businesses and territorial roots, with a growing process of internationalization, technological innovation and development of distribution channels (Rodrigo-Alarcón, Parra-Requena, & García-Villaverde, 2014). The wine sector occupies a prominent place in the whole of this industry, both for the quality and the variety of its production (Fuensanta, Sancho, & i Marco, 2015). In fact, Spain is the country with the greatest expanse of vineyards in the world, with 945,727 hectares allocated to vine cultivation in 2013 (International Organisation of Vine and Wine –OIV–). According to data from the Spanish Institute for Foreign Trade (Spanish Institute of Foreign Trade, ICEX) the production of wine in Spain is elaborated in the 4,600 wineries which are distributed throughout the national territory, although not in a uniform way. In addition, it is a sector in which there is generally a predominance of small, family-owned companies and where a strong presence of the phenomenon of cooperativism can also be detected (Fuensanta *et al.*, 2015).

Due to all the above, the wine industry is not only important in terms of production, but it is also relevant for its certified quality. Spain is the fourth country in the European Union with certified quality assurance in its wines, behind France, Italy and Germany. According to data from the Qualigeo data base, Spain had, in 2019, 96 Protected Designations of Origin (PDO) and 42 Protected Geographical Indications (PGI) recognized. Some of these certifications are strongly valued in foreign markets. For example, the Qualified Denomination of Origin Rioja is relevant in Europe, being 4.5% of quality wines p.s.r. sales in the European Union (Barco, 2002).

Regarding the link between the wine sector and the territory in which it is developed, it is a manufacturing activity that is rooted in the tradition and culture of many territories. firms in our country are located in industrial districts In addition to the historical aspects, more recently, the management derived from the Designations of Origin has contributed to strengthening wine firms' connection to the territory, due to the obligation to use raw materials of a given origin and carry out certain phases of the production process in the specific geographical area (Sánchez, 2003). In general, the



aforementioned aspects have favoured that many of the wine-producing companies in our country are located in industrial districts (Fuensanta *et al.*, 2015).

Thus, it sometimes constitutes the local community's main source of income, in a direct way (through the cultivation of the vine, its transformation into wine, and different ways of commercialization), and indirectly through the emergence of auxiliary industries (barrels, glass, cork, labeling, etc.) and complementary services (wine tourism). According to Iacoponi (1990), the agro-industrial district would be that in which the production activity developed in the local environment contains all the phases of agribusiness; therefore including the suppliers of agriculture companies, the companies themselves and also the companies engaged in the transformation and distribution of products from agriculture.

The objective of this research is to analyse the industrial districts specialized in the production of beverages in Spain. For this, a multi-case study of these industrial districts is carried out from a historical perspective. So, this document helps to elucidate the origin, nature and evolution of these specialized environments that have been previously identified as industrial districts.

To carry out the multi-case study, the analysis unit is composed of industrial districts, specifically, 7 beverage districts are analysed in Spain. The cases analysed are not important just for regional economic development but are also essential for the whole of the Spanish wine sector. Additionally, the wine market is a very important source of economic wealth in these territories and a major employment provider that creates a powerful foreign trade.

By autonomous communities the districts are distributed as follows: La Rioja (Haro and Cenicero); Catalonia (Sant Sadurní d'anoia); Aragon (Cariñena); the Valencian Community (Requena); Murcia (Jumilla); and Castilla-La Mancha (Valdepeñas).

The main results obtained from the study show that the 7 cases analysed globally fulfil the conditions to be considered industrial districts. In addition, some common aspects related to its historical development are also remarkable.

- The long tradition of vitiviniculture activity in the territory. In most cases its origin dates back to the Iberian or Roman era.
- The opportunity for growth and development that phylloxera represented for this industry at the end of the 19th century, especially important in the cases analysed given its strong dependence on this economic activity.
- The creation of the Appellation of Origin at the beginning of the 20th century as an intangible resource capable of promoting the development of Spanish wines, in general, and the activity of the cases analysed in particular. There is a strong



overlap between the municipalities that make up the districts and the designation of origin.

- The construction of railway lines as the backbone of the local economy, as well as the impulse towards internationalization

Keywords: wine region, Spain, historical perspective



Sustainable development of cluster organizations

Anna Maria Lis, Gdańsk University of Technology, anna.Lis@zie.pg.gda.pl
Adrian Lis, Collegium Civitas, adrian.lis@civitas.edu.pl

Abstract

Purpose: The main purpose of the paper is to link the concept of industrial cluster with the concept of sustainable development. The authors take into account the cluster understood both in economic and organizational categories. An example of the latter are cluster initiatives also known as cluster organizations, which are established to support the development of clusters in a given region. Cluster organizations should be understood as formally established organizations which function at a higher level of aggregation, composed of institutional members that have joined them purposefully, and act actively in order to achieve some collective or individual objectives.

Methodology: The authors report the findings from a qualitative study carried out in four purposefully selected cluster organizations functioning in Poland: in two cluster organizations representing the ICT sector (Mazovia Cluster ICT and Interizon: Pomeranian Region ICT Cluster) and in additional two, operating in the metal industry (Metal Working Eastern Cluster and Metal Cluster of Lubuskie Province). The study was based on the interpretative-symbolic paradigm and the inductive-abductive approach. The main strategy applied in the study was grounded theory. The basic method of data collection was an in-depth individual interview conducted with cluster coordinators and members (35 in-depth interviews and 1 group interview in total). Data analysis and interpretation were based on content analysis and coding.

Results: The study is based on the concept of trajectory for the development of cooperative relationships in cluster organizations. As part of this concept, four levels of cluster cooperation have been distinguished: level I "Integration at the unit level", level II "Allocation and integration at the process level", level III "Impact on the environment", and level IV "Creation and integration at the organizational level". The highest level IV represents the most mature level of cluster cooperation. Each identified level can be analysed through the prism of the concept of sustainable development, additionally taking into account different levels of aggregation – in relation to the cluster, the cluster organization as well as enterprises (cluster members) that are components of cluster organizations. Because in each case, the basis for sustainable development in cluster organizations are stable and strong relations, therefore the most important is level I "Integration at the unit level", consisting in creating a base network of relationships among cluster entities. In turn, three next levels are visible signs of sustainable development, but each in a different context. Level II "Allocation and integration at the process level", connected to facilitating access to the increased pool of resources, shows



Cities Networks and Exploratory Innovation

S. Edet. IMT School for Advanced Studies, Italy and Faculty of Economics and Business, Katholieke Universiteit, Belgium

M. Riccaboni. Faculty of Economics and Business, Katholieke Universiteit, Belgium

R. Belderbos. Faculty of Economics and Business, Katholieke Universiteit, Belgium

F. Benoit. IMT School for Advanced Studies, Italy and Faculty of Economics and Business, Katholieke Universiteit, Belgium

G.H. Lee. Faculty of Economics and Business, Katholieke Universiteit, Belgium

Abstract

Urban areas play a key role in knowledge production with the majority of patents invented in global cities. Inventors take advantage of local agglomeration economies and collaboration networks within and across cities in exploring new knowledge. This paper examines the effect of external direct ties (in the inter-city collaboration network) and knowledge stock relatedness to novel external knowledge (in the knowledge network) on exploratory innovations (i.e. innovations novel to cities) outcomes. In doing this, we implement matching and delimiting algorithms that improves the city level patent information in the Patent Statistical (PATSTAT) database for period 2000-2015. Our study of 1150 cities between 2005-2011 show that small cities leverage external direct ties in inter-city collaboration network for exploratory innovation, especially for exploratory innovation done in collaboration with other cities. While large cities leverage the broad connectivity of their knowledge stock with novel external knowledge to increase the value of exploratory innovation produced.

Keywords: city network, knowledge production, patents



Sustainable Development of Cluster Organizations

Anna Maria LIS. Gdańsk University of Technology. Poland. Anna.Lis@zie.pg.gda.pl
Adrian LIS. Collegium Civitas. Poland. adrian.lis@civitas.edu.pl

Abstract

Purpose

The main purpose of the paper is to link the concept of industrial cluster with the concept of sustainable development. The authors take into account the cluster understood both in economic and organizational categories. An example of the latter are cluster initiatives also known as cluster organizations, which are established to support the development of clusters in a given region. Cluster organizations should be understood as formally established organizations which function at a higher level of aggregation, composed of institutional members that have joined them purposefully, and act actively in order to achieve some collective or individual objectives.

Methodology

The authors report the findings from a qualitative study carried out in four purposefully selected cluster organizations functioning in Poland: in two cluster organizations representing the ICT sector (Mazovia Cluster ICT and Interizon: Pomeranian Region ICT Cluster) and in additional two, operating in the metal industry (Metal Working Eastern Cluster and Metal Cluster of Lubuskie Province). The study was based on the interpretative-symbolic paradigm and the inductive-abductive approach. The main strategy applied in the study was grounded theory. The basic method of data collection was an in-depth individual interview conducted with cluster coordinators and members (35 in-depth interviews and 1 group interview in total). Data analysis and interpretation were based on content analysis and coding.

Results

The study is based on the concept of trajectory for the development of cooperative relationships in cluster organizations. As part of this concept, four levels of cluster cooperation have been distinguished: level I "Integration at the unit level", level II "Allocation and integration at the process level", level III "Impact on the environment", and level IV "Creation and integration at the organizational level". The highest level IV represents the most mature level of cluster cooperation. Each identified level can be analysed through the prism of the concept of sustainable development, additionally taking into account different levels of aggregation – in relation to the cluster, the cluster organization as well as enterprises (cluster members) that are components of cluster organizations. Because in each case, the basis for sustainable development in cluster organizations are stable and strong relations, therefore the most important is level I "Integration at the unit level", consisting in creating a base network of relationships among cluster entities. In turn, three next levels are visible signs of sustainable development, but each in a different context. Level II "Allocation and integration at the process level", connected to facilitating access to the increased pool of resources, shows how to use resources most effectively. Enterprises, based on cluster cooperation, can gain access to additional resources (incl. information, material, financial, and human resources, as well as knowledge) while sharing excess resources with other entities. Level III "Impact on the environment" is aimed at gaining impact on the external environment of the cluster organization in different dimensions: social, economic, environmental, etc. Level IV "Creation and integration at the organizational level", focused on setting up conditions to create common added value by pooling resources, to the greatest extent, allows achieving synergies, and thus increases competitiveness and innovation of enterprises that have managed to reach this level.

The theoretical contribution

The research goes beyond the state-of-the-art knowledge in both the concept of industrial cluster and sustainable development by exposing a broader view of cluster cooperation, which could be basis and at the same time the sign of sustainable



development. The findings present a broader view on the development of cluster cooperation, analyzing each distinguished level of cooperation through the prism of factors connected to sustainable development. Nevertheless, the qualitative approach does not allow the authors to generalize the findings.

The practical contribution.

The study also provides practical implications for both public authorities and cluster coordinators. They concern the way of shaping cluster-based policy at various levels (from supranational to regional) and designing and managing cluster organization in order to achieve sustainable development. Politicians responsible for cluster-based policy, taking care of sustainable cluster development, should launch appropriate instruments to support the development of cluster cooperation and building relationships both within cluster organizations and with external entities. The concern of cluster coordinators for sustainable development of a cluster organization should be manifested in undertaking conscious and intentional activities leading to achieving ever higher levels of cooperation (from I to IV) and motivating cluster members to engage in these activities.

Keywords: industrial cluster, cluster organization, collaboration theory, sustainability, sustainable development



Study of La Paz (Bolivia) tourism industry as a promoter of an Entrepreneurial Ecosystem

Paola Sandi Navarro. Universitat Politècnica de València (Spain). paosanna@epsg.upv.es

Lourdes Canós-Darós. Universitat Politècnica de València (Spain). loucada@omp.upv.es

Cristina Santandreu-Mascarell. Universitat Politècnica de València (Spain). crisanma@omp.upv.es

Abstract

The tourism sector is, without a doubt, one of the strongest and most important economic activities that exist. Even with the actual global pandemic crisis, the outlook for after the crisis remains favorable.

The existence of a great diversity of tourist typologies allows more and more people to dedicate their leisure time to travelling around the world and discovering new cultures. For this reason, it has become such an important activity, not only because of the number of people it moves each year, more than 1,400 million according to the UNWTO in 2019 (Epdata, 2020), but also because of the amount of employment it generates or the infrastructure, all this without talking about the social consequences.

These are some of the aspects in which the city of La Paz, and the country (Bolivia) in general, can benefit from increasing its tourist positioning and carrying out a strategy to create an entrepreneurial ecosystem. As Isenberg explains in his work *How to start an entrepreneurial revolution* (2011), it is not necessary to have a strong economy or large cities in order to develop a successful entrepreneurial ecosystem.

Bolivia, and more specifically the city of La Paz, has great tourist potential that is not being used. Its natural wealth, represented in its exuberant landscapes, as well as its cultural richness, reflected by the number of original indigenous cultures that continue existing and that live far from the cities, are only two aspects that make it a unique city. However, it remains the great unknown in the most important cities in Latin America. For this reason, it has been decided to analyze whether it is possible for the city of La Paz (Bolivia) to develop an entrepreneurial ecosystem focused on tourism, in order to see if, in the future, it can be used as a way of positioning while attracting capital and investments needed to bring out the spoiled local economy.

The objective of this research is to analyze, according to the study of the Isenberg pillars, if in the city of La Paz (Bolivia) it is possible to develop a successful entrepreneurial ecosystem focused on tourism industry. With this aim, the 2019 Global Startup Ecosystem Report has also been analyzed to find the key points shared by the world's main entrepreneurial ecosystems. With all this information, a qualitative



comparison has been made, which has made it possible to understand the reality that the city of La Paz (Bolivia) faces in terms of entrepreneurship.

All this information has allowed to conclude that the persistent instability, as well as the lack of planning, have caused that all the work done in the last decade have been scarce and not very relevant.

At the tourist level, the positioning of Bolivia as a destination is not very high, it is still a great unknown to the world. This is partly due to the conception of the sector that the different agents involved have, who do not highlight or value the attractions they have and who see the sector as secondary, unable to understand how important it is. This means that, in many cases, not even citizens themselves know how to appreciate beauty and diversity.

It can be concluded that the city of La Paz is not prone to host an entrepreneurial ecosystem specialized in the tourism sector, since the agents involved are not working to guide the destination towards this objective.

Bolivia has a very high tourist potential, mainly due to its natural wealth, appreciable in its rich landscapes, and cultural, due to the purity of its indigenous people. An image far removed from that found in countries where the tourist tradition is greater and where the people themselves have learned to recreate what visitors like, even at the cost of losing the authenticity of their customs. In this sense, Bolivia could have a comparative advantage, which is well developed, and could represent significant competition for the Latin American countries that lead the sector.

However, aspects such as security, the amount of complementary offer or its quality, are not positive to take advantage of its full potential. Starting a cooperation between public and private sector to increase the touristic activity would be the first action to improve. Then, any action that you want to carry out if it is consensual and thought from all points of view, can be successful. Moreover, it could mean, perhaps, that in a few years the reality of the city will be different, and that there is an emerging entrepreneurial ecosystem in the tourism sector.

Keywords: Bolivia; Entrepreneurial Ecosystem; Global Startup Ecosystem Report; Isenberg Model; La Paz; Tourism sector.



Elements of an entrepreneurial ecosystem based on tourism in Malabo, Equatorial Guinea

Coloma Mba Nseng. Universitat Politècnica de València (Spain). combns@alumni.upv.es

Lourdes Canós-Darós. Universitat Politècnica de València (Spain). loucada@omp.upv.es

Cristina Santandreu-Mascarell. Universitat Politècnica de València (Spain). crisanma@omp.upv.es

Abstract

In this paper we present an analysis of different elements and actors in Equatorial Guinea as a potential entrepreneurial ecosystem, by considering tourism sector as the engine of the clustering. In this context, we consider that the capital of the country, Malabo, is a key for organizational success. Many authors consider that the current economic development of the countries is driven by entrepreneurs where it is important that some actors promote their training, being aligned to encourage the creation of new companies and start-ups (Bucardo et al., 2016, Hernández & González, 2017, Mejias, 2011). For this, we list some agents included in the six pillars from Isenberg (2011) model (Policies, Market, Financing, Culture, Services and support, Human Capital). Lastly, we will check if the conditions to generate a healthy ecosystem based on tourism are met in Malabo, Equatorial Guinea.

The research is based on documentary analysis and direct observation. Both primary and secondary sources have been used. These sources include the revision of literature and reports from different governmental entities, private companies, universities, among others, that promote the impulse of entrepreneurs in Malabo, Equatorial Guinea.

The elements described in Isenberg pillars can be identified to know the feasibility of creating an entrepreneurial tourism ecosystem for Equatorial Guinea in the city of Malabo. In this model, the pillars of services and support, and culture are highlighted, considering the number of associations that are being formed to support companies such as the Equatorial Guinea Holding, Guinea de Negocios, Equatorial Guinea Press, and Equatorial Guinea 360 initiatives (Empresasguinea, 2017; Guineaequatorial360, 2015). Financing is also highlighted, considering the number of new financial institutions that oxygenate the market, which is why the market pillar has the potential to develop (Holding, 2017; Guineainfomarket, 2015). The pillars of education and politics are in smaller size, where education, although it has been evolving (MECD, 2016), requires more investment because it is the basis of all training and entrepreneurship (Dyombe, 2009). Finally, there is the political pillar, which has the minor weight because the political situation together with the high degree of complexity that the country presents are limitations for the emergence of new ventures (Guineaequatorial, 2008).



As a general conclusion we can affirm that many elements of the model are missing for an entrepreneurial ecosystem in Equatorial Guinea. However, the potential exists and investors with a risk appetite who wish to invest in an initial stage will foreseeably obtain good economic benefits, if economic conditions are maintained or even improved.

Keywords: Elements; Entrepreneurial Ecosystem; Equatorial Guinea; Isenberg Model; Malabo; Tourism.



The Contribution of Tourism Clusters on Regional Development with Special Regard to Safety and Security Factors: The Case of the Golden Triangle Region in Jordan.

Al-Rifai, Ahmad. Polytechnic University of Valencia – Spain

Abstract

The role of clusters in tourism as Porter defined in 1998 means a cooperation among stakeholders, academic institution and providers in order to contribute to develop tourism in a region. It is true that clustering as theories so concepts refers to manufacturing more than to tourism sector (Breda, Costa, & Costa, 2004; Jackson & Murphy, 2002). However, there are some example about the application to tourism which continues exponentially growing (Breda, Costa, & amp; 2004; Jackson & amp; Murphy, 2002). In relation to the concept of cluster in tourism activities, Capone at 2004 defined it as *“a geographic concentration of companies and institutions interconnected in tourism activities, this includes suppliers, services, governments, institutions, universities, and competitors”* (Capone, 2004 p. 73). Moreover, it is interesting the insides of da Cunha and Cunha (2005) whom went a step forward using cluster as a tool for achieving competitiveness and sustainability. Following at Jackson and Murphy (2002) the identification of the cluster concept applied to tourism product development is extremely appropriate given that the tourist is the result of the interaction of local supplier’s innovation and includes many stakeholders as well. Moreover, as Allalar (2015) states tourism cluster strategy must begin with the identification and classification of the cluster key elements in order to achieve local development. In this context Fernando and Long (2012) argue that tourism cluster competitiveness can be determined by 6 factors: *“core resources including natural and cultural/heritage resources, and created resources such as infrastructure and events; supporting factors such as service quality and accessibility; destination management, involving private and public sector management; demand conditions which are shaped by awareness, perception, and preferences; innovations focused on product/service differentiations and tourism experiences; and situational conditions relating to economic, social, cultural, demographic, environmental, regulatory, technological, and competitive trends and events”* (Fernando and Long, 2012 p. 80). Among those supporting factors, security and safety issues have a critical importance for the tourist comfort such physical as psychological (Viñals et al., 2014), and consequently for regional development. So that, in order to achieve effective tourism, a safe and secure destination is needed (UNWTO, 1996; Istuan and Zonanvi, 2011) and for its competitiveness as well (OECD, 2010; World Economic Forum, 2019).

The general purpose of this research is to identify the impact of tourism clustering on regional development, and to highlight the importance of security and safety factors.



This research will take the Golden Triangle Region in Jordan as a case of study in order to: i) analyze the impact of tourism and its network system highlighting the role of security and ii) identify and tourism clusters and classify them in order to promote its regional development benefits. To achieve it, the research methodology adopted will collect information and it will be analysed using qualitative approach by the study of secondary data from focused review of published documentation including journals articles, technical reports sourced from the websites of international tourism organizations and agencies; USAID office reports at Jordan; and online conferences proceedings. Moreover, the research will use primary data sources from personal interviews with university scholars, Jordanian ministry of tourism, Jordanian tourism board, tourism operators, tourism businesses, and tourist guides.

Keywords: Clusters, tourism clusters, regional development, security and safety, golden triangle, competitiveness.



Integrating firms' strategies in cluster life cycle dynamics and resilience – an analytical framework

Svitlana Magalhaes de Sousa Ostapenko – PhD in Management, Faculty of Economics, University of Porto.

Ana Paula Africano – Assistant Professor at Faculty of Economics, University of Porto.

Raquel Meneses - Assistant Professor at Faculty of Economics, University of Porto.

Abstract

Cluster success is important to the health of the companies, as cluster is a “system of interconnected firms and institutions whose whole is more than the sum of its parts” (Porter, 2000, p.21). At present, the dynamic perspective on clusters, namely, Cluster Life Cycle (CLC) theory, is one of the prominent research areas on clusters (Lazzeretti et al., 2019). Within this perspective, evolution of the clusters, their success or failure and what can be done to influence it, namely, through cluster success factors and appropriate policies, represent intense research focus nowadays (Elola, Valdaliso, Franco, & López, 2017; Fornahl & Hassink, 2017; Pronestì, 2019; Solvell, 2015; Tavassoli & Tsagdis, 2014). Pronestì (2019) emphasizes the necessity to include CLC insights into the development of Smart Specialization Policies that are oriented to enhance the untapped potentials of regional economies. “Disregarding the investigation of the CLC would produce an underestimation of regional economy’s dynamics, and consequently a misinterpretation of the context” (Pronestì, 2019, p.223).

Deriving from the Cluster life cycle approach is the research on the resilience of clusters (Suire & Vicente, 2014). “Some clusters go through cycles mirroring the cycles of products, while some others succeed in disconnecting their cycles from the cycles of products and exhibit a continuous trend of growth. Resilient clusters fit into the latter category” (Suire & Vicente, 2014, p.142). Question of resilience is inherent to cluster evolution, as it tries to understand what makes clusters to survive. “Regional clusters are constantly exposed to external disruptions from changes in the industry and the market. A cluster’s ability to adapt to these changes – resilience – determines the evolution of the cluster after such disruptions” (Østergaard & Park, 2013). Resilient cluster has endogenous adaptive ability to resist external shocks and stresses by reorienting themselves towards new technological fields (Suire & Vicente, 2014). Within the actual context of pandemics of Covid-19, resilience became even more relevant and possible to address in practice. “Applied to clusters, resilience can be interpreted as an adaptive capability that allows a cluster to make changes to overcome internal and external disruption and still function with its identity as a cluster within a particular field” (Østergaard & Park, 2013, p.2). Following Suire & Vicente (2014), an understanding of critical parameters which allows clusters to succeed could be at the heart of the renewal of technological and regional policy in a turbulent macro-economic context characterized



by high instability and new growing consumer paradigms. Thus, it is important to address cluster success factors that will foster cluster development and resilience considering Cluster Life Cycle perspective.

On the other hand, cluster consists of many firms and organizations that have different strategies and “the only way the cluster can change is through the actions of individuals, firms and other organisations, all of which may react very differently to the same change. “(Østergaard & Park, 2013, p.7). That is why, Østergaard & Park (2013) emphasize that it is necessary to investigate the actions of different actors in a cluster when studying cluster resilience. The resilience properties of clusters are governed not only by exogenous, but by endogenous forces, that is by the ability of their internal organization to drive economic changes and influence the emergence of new markets (Suire & Vicente, 2014). In this context, to understand the interplay between firm and cluster is a crucial issue (Conz et al. 2017). “A better understanding of the interplay between the SME and the cluster may provide useful insights into how managers can boost the firm-specific resilience of their organisations and, at the same time, mitigate any negative influence of the cluster in which they are embedded” (Conz et al., 2017, p. 187). Harris (2020, p.10) have named firms as “inevitable backbone of any cluster” and in line with some recent research developments advocates for more actor-centric approach, focusing on the role of the agency of firms and organizations. In this regard, firms’ behavior and success are extremely important for the cluster, as precisely the success of the companies will represent cluster’s success and resilience as a whole. Following Delgado (2018, p.2), the “types of strategies, organizational practices, operations, and, ultimately, performance of firms are shaped by the attributes of the locations and clusters they participate in”. “The performance of the cluster as a whole is dependent on the success of the individual firms and moderated by the cluster factors, supporting organizations, and customers and competitors” (Davis et al., 2006, p, 5). Therefore, on one hand firms’ strategies are important for the cluster success and resilience, and on the other hand, firms need to understand the dynamics specificity of their environment when developing strategy to achieve better performance.

Delgado (2018) states that to date, the interaction between firm’s performance and attributes of locations has not been properly examined, and the interplay of economic geography and management represents a broad research opportunity. “Future work should examine the interaction among the spatial organization of firms (within and across nations), management practices, and firm performance” (Delgado, 2018, p.17). However, “firms’ behaviour in the form of strategy” within a cluster is still one of the aspects that is “underexplored so far”. It is vital to research the responses and actions the firms implement, such as internationalisation, relocation, innovation, differentiation, specialisation, outsourcing, offshoring and reshoring, in order to adapt to the constantly changing conditions of the firm’s environment (Puig & González-Loureiro, 2017, p. 6-7). Delgado (2018) also states that to date, the interaction between firm’s performance



and attributes of locations has not been properly examined, and the interplay of economic geography and management represents a broad research opportunity.

Usually, strategy is considered at two primary levels: corporate (diversification, integration - vertical or horizontal - and International strategies) and business levels of strategy (three most common are cost leadership, differentiation, and focus) (Porter, 1998). Firm's strategies in dynamic perspective have already been approached from an industry life cycle perspective, but considering CLC perspective the research is relatively scarce (Conz et al., 2017; Delgado, 2009; Elola et al., 2012; Rocha, Kury, Tomassini and Velloso, 2017; Viederytė, 2018). Based on generic strategies, in particular diverging form differentiation strategy, there is a growing body of literature about three concepts that are regarded as strategies themselves and that are highly interrelated: cooepetition, innovation and Corporate Social Responsibility (CSR).

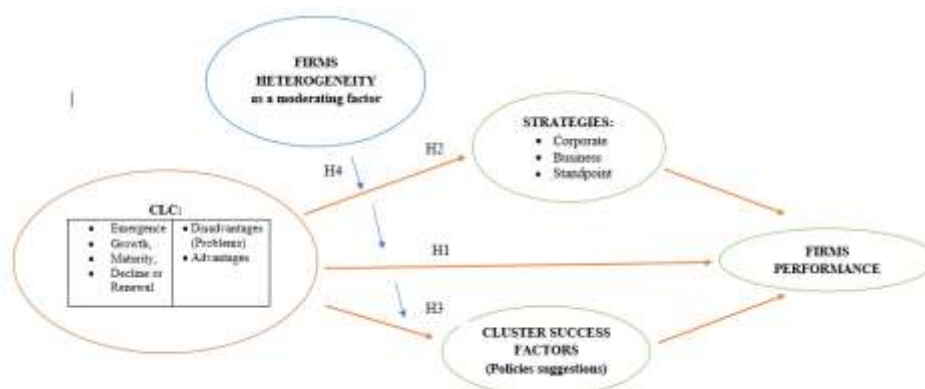
Coopetition is a successful strategy for firms in the cluster, especially in the wine sector (Lorenzo & Lattanzi, 2014; Granata Lasch, Le Roy & Dana, 2018; Christ, Burritt & Varsei, 2017; Crick, 2018). Coopetition is a strategy that includes competition and cooperation at the same time (Devece, Ribeiro-Soriano & Palacios-Marqués, 2019) to access opportunities that would be unreachable competing on an individualistic-level (Crick, 2018). Coopetition strongly relates to innovation (Sala, 2016; Granata, Géraudel, Gundolf, Gast, & Marques, 2016) because innovation is one of the most common objectives of coopetition strategies (Devece et al., 2019; Nazzaro, Marotta & Rivetti, 2016). Innovation is a strategy that is of great importance to firm's competitive advantages (Moreno, García-Pardo & Campo, 2011). Additionally, innovation relates to another concept with growing importance – Corporate Social Responsibility (Shen et al., 2016; Szutowski & Ratajczak, 2016). In turn, CSR is linked to coopetition, especially in this environmental perspective (Christ et al., 2017; Jans & Haezendonck, 2018). CSR is increasingly intersecting, integrating, converging, with business strategy and regarded as a part of it (Galbreath, 2009; Nwagbara & Reid, 2013; McManus, 2008). Hence, competition, innovation and CSR are becoming extremely important in firms' strategy formulation, and for that reason we will consider them as a specific group, a third block of strategies reflecting companies' attitude towards their context, named as standpoint strategies.

Within the standpoint strategies, Bouncken *et al.* (2015) identified that the dynamic approach to coopetition was a relevant topic for future research. Several researchers took these perspectives in their studies, Dana, Granata, Lasch and Carnaby (2013), Felzensztein, Gimmon, and Deans (2018), Hannachi and Coléno (2015), Taplin (2010), but they lack an exact classification of different stages that could relate to the CLC. From the CLC perspective, innovation is one of the parameters by which clusters evolution can be monitored (Ostapenko, 2017). There is already a dynamic perspective on CSR with four different phases of the combination of CSR and altruism (Saju & Venkitachalam, 2019), yet there is no relation to the CLC. Innovation and Coopetition

have been considered and related to CLC within the resilience strategies model proposed by Conz et al. (2017) that covers four strategies: organisational, innovative, cooperative and entrepreneurial. According to Conz et al. (2017) resilience strategies of SMEs vary along the cluster life cycle and the ability of managers and entrepreneurs to balance resilience practices directly impacts the economic performance of the firm. So, competition, innovation and CSR are crucial pillars of modern firms' strategies and they have been widely studied on their own and in their intersections. However, there is no comprehensive study relating these standpoint strategies with the CLC perspective.

So, there is no systematisation, nor classification, of corporate, business and standpoint strategies that firms apply in different stages of their cluster life cycle. Additionally, success factors and policies at each stage of the cluster life cycle need further development. This work aims to contribute to fill this gap in the literature. Consequently, we propose an analytical framework (Figure 1) that aims to understand cluster dynamics by looking at two levels: the most relevant firms' strategies and cluster success factors (policies) at each stage of the cluster life cycle (CLC). Both levels of analysis are linked to the CLC, to firms' performance, and are moderated by firms' specific characteristics. Performance is considered through market and financial perspectives and proposed to be measured prevalently by return on investment (ROI), market share, profit margin on sales, the growth of ROI, the growth of sales, the growth of market share, and overall competitive position (Islami et al., 2020b). Numerous firm-level resources and capabilities could be considered to analyse the link between strategy and performance (Baney, 1991; Grant 1991; Teece, 2007, 2018). Although in this case will be taken into account the moderating effect of firms' age and size, following the study of Osibanjo et al. (2019) regarding the moderating effect of firm age and size on the relationship between industrial clustering and SMEs' performance.

Figure 1: Analytical framework of the research:



Hypothesis:



-
- H1: Each stage of the cluster life cycle directly influences firms' performance by providing certain advantages and disadvantages.
 - H2: Each stage of the cluster life cycle influences firms' strategy choice that affects firms' performance
 - H3: Each stage of the cluster life cycle influences cluster success factors that impact on firms' performance
 - H4: Firms' heterogeneity moderates the direct and the indirect influence of cluster life cycle stages on firms' performance.

This work will be structured as follows: 1) At first, the research on Cluster Life cycle theory and its recent developments will be presented; 2) Then, Cluster Success factors and CLC will be addressed; 3) Further, the review of strategy types (corporate and business) will be made, and standpoint strategies (coopetition, innovation and CSR) will be introduced; and also a dynamic approach to strategy will be investigated, namely the link between CLC and strategy; 4) And in the end variables for the analytical framework will be presented.

This ongoing research aims to contribute to the development of cluster theory, in particular, to the theory of Cluster Life Cycle and Strategic Management by studying responses to the different stages of cluster evolution at the individual firm and cluster level and elaborating a two-level analytical framework of cluster dynamics. It is also hoped that elaborated framework would be a useful tool for company managers and policymakers to choose their strategies within cluster dynamics.

The theoretical framework designed in this research will be used in further development of our work, for an empirical application, namely to study four distinct wine clusters: Demarcated Douro Region, Bordeaux, Napa Valley and Crimea wine clusters. The dynamics of the development of wine clusters, its corresponding strategies and CSF will be studied, with special attention to resilience strategies in the context of pandemics

Keywords: cluster, cluster life cycle, resilience, strategy, cluster success factors.



Knowledge Connectivity of Global Cities and Foreign R&D Investment: Organisational Pipelines versus Distributed Ownership

René Belderbos, KU Leuven, Faculty of Economics and Business

Geon Ho Lee, KU Leuven, Faculty of Economics and Business geonho.lee@kuleuven.be

Ram Mudambi, Temple University

Abstract

We examine how the characteristics of international knowledge networks of global cities affect their attractiveness to R&D investments of multinational enterprises (MNEs). We examine two characteristics of international knowledge connectivity: 1) the extent of connectedness (“depth”) of global cities in international knowledge linkages and 2) the geographical diversity (“breadth”) of the cities' international knowledge networks. In addition, we argue that the concentrated ownership of international knowledge linkages negatively moderates the effects of the depth and the breadth of international knowledge linkages on MNEs' R&D location choices. Initial results of an analysis of the location of 1,340 cross-border R&D investments among 57 global cities, 2003-2012, provides support for these conjectures.

Keywords: Multinationals, R&D investment, Connectivity, Global cities



Rise and fall of interdisciplinary inventive activities in European bioclusters: a network approach

Milad Abbasiharofteh. Department of Structural Change; Leibniz Institute of Agricultural Development in Transition Economies; Germany. abbasiharofteh@iamo.de

Frans Hermans. Department of Structural Change; Leibniz Institute of Agricultural Development in Transition Economies; Germany

Abstract

Innovative activities tend to cluster geographically. This fact has caused an upsurge of studies that investigate the impact of geographic clustering on innovation and economic performance (for a review, see Hervas-Oliver et al., 2015). Clusters contribute to the growth of radical and interdisciplinary innovation (Grashof et al., 2019), which is perhaps the result of a dense network of collocated and cognitively distant actors. The sustainability transition literature has acknowledged this attribute of clusters and emphasized on the relevance of the so-called ‘bioclusters’ in which a wide range of actors collaborate to find solutions for replacing current fossil-based economy with a carbon-free one. Thus, bioclusters’ knowledge networks (complemented by interregional learning relations) seem to provide an optimal setting for fostering the transition to a sustainable bioeconomy (Hermans, 2018). That said, interdisciplinary and cross-sectoral collaborations in bioclusters cannot be taken for granted. This is perhaps because the process of forming collaborative ties is strongly path-dependent, implying that individuals and organizations in a geographic area tend to collaborate with cognitively proximate peers (Boschma, 2005) and with the ones with whom they share a collaborative partner (Giuliani, 2013; Giuliani et al., 2018). This so-called ‘retention mechanism’ (Glückler, 2007) brings about an undesired inertia that holds back required interdisciplinary and cross-sectoral collaborations in bioclusters.

Although the literature on cluster studies is replete with empirical investigations of the relation between proximity dimensions and network micro-determinants, and forming collaborative ties (Abbasiharofteh and Broekel, 2020; Giuliani, 2013; Giuliani et al., 2018; Juhász and Lengyel, 2017; Lazzaretti and Capone, 2016; Molina-Morales et al., 2015), little is known about how the structural properties of a knowledge network might facilitate or hamper the formation of interdisciplinary collaborative ties. This is of critical importance because the failure of policy measures is partly driven by ‘uncertainty’ which associated with the fragmentation of knowledge, and by ‘interaction failure’ which associated with a lack of appropriate network structure connecting stakeholders (Wanzenböck and Frenken, 2020; Wanzenböck et al., 2019). These two issues are specifically network problems as the former is related to network ‘connectivity’ and the latter to network ‘hierarchy’ (see Figure 1).

Figure 1. A stylized representation of cluster network types

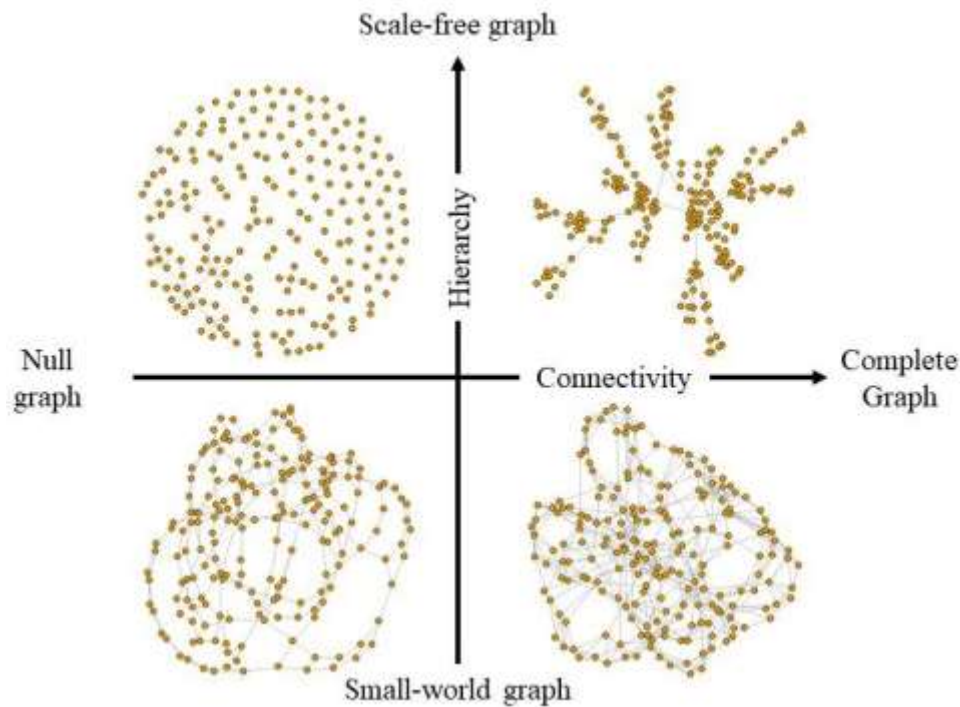


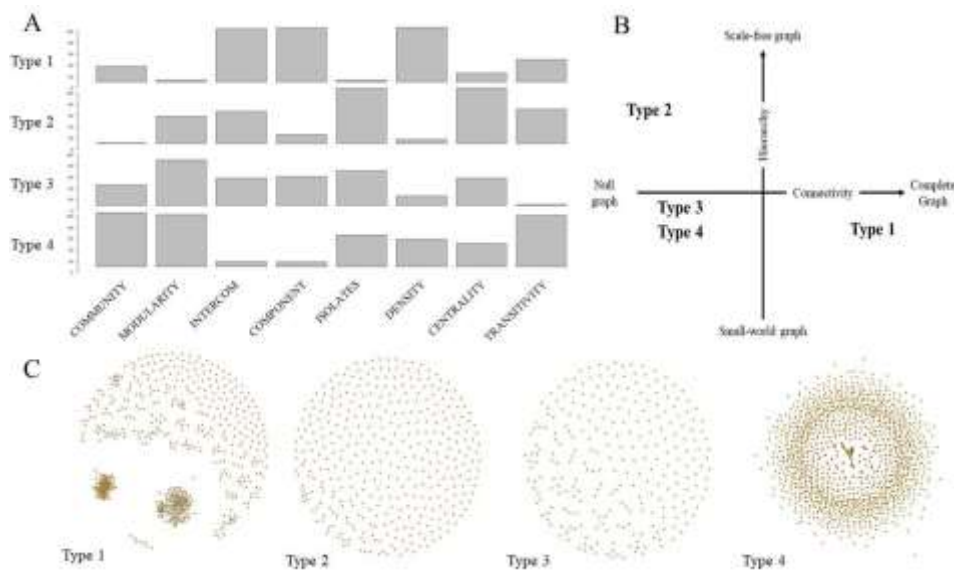
Figure 1. A stylized representation of cluster network types

To tackle this issue, this paper builds on the principles of network theory and theoretically argue how changes in the connectivity and hierarchy of a collaborative network may interact with the combination of cognitively distant knowledge pieces. Empirically, we identify and investigate bioclusters in Europe. In doing so, we study the co-inventorship network of each identified biocluster between 1990 and 2015. Using the so-called the Archetypal benchmarking method, an unsupervised machine learning technique (Porzio et al., 2008; Ragozini et al., 2017), we classify cluster networks based on the extent to which organizations are connected (connectivity) and the skewness of cluster networks' degree distribution (hierarchy).

Our results suggest four types of 'real' cluster networks. That is 1) densely connected, 2) highly disconnected, 3) moderately disconnected and modular, and 4) transitive islands. Using a set of fixed effects regression models, our results suggest that Type 1 is positively associated with the growth rate of interdisciplinary patents in the upcoming time-window, whereas Type 4 is negatively correlated (see Figure 2). This finding is robust across various specifications such as the inclusion of size-related covariates as well as the degree of specialization and the complexity of clusters' technological portfolios.

Our results provide insight into how the structure of a collaborative network may contribute to the success of place-based (e.g. smart specialization in the European context) and regional diversification policy measures (Wanzenböck and Frenken, 2020). Also, this paper paves the way for creating a typology of clusters based on their knowledge sourcing specificities, which can be used for tailoring cluster policies based on specific clusters needs (Abbasiharofteh, 2020; Fornahl and Hassink, 2017).

Figure 2. A representation of observed cluster network types. Panel A represents the structural properties of each identified type. Panel B shows the position of each type on the connectivity-hierarchy graph. Panel C provides examples of cluster network for each type.



Keywords: bioclusters, collaborative networks, interdisciplinary activities, archetypal benchmarking



Industrial dualism in cluster networks of developing countries

Pablo Galaso. I Instituto de Economía, Universidad de la República (Uruguay). pablogalaso@gmail.com

Adrián Rodríguez Miranda. Instituto de Economía, Universidad de la República (Uruguay)

Abstract

Literature on industrial districts and clusters have documented how collaboration networks among firms and organizations can positively influence innovation. On the other hand, studies on industrial dualism have analyzed different aspects of economic sectors in which large and more productive firms coexist with small and low productive companies. Combining these two perspectives, in this paper we argue that industrial dualism is critical to understand the effects of networks on innovation in clusters of underdeveloped countries. We hypothesize that innovation in small local firms highly depends on the cluster network and its institutional environment, while these factors are not so determining for innovation developed by large and multinational firms. To test this hypothesis, we use data from an extensive fieldwork carried out in 18 clusters located in four Latin American Countries: Chile, El Salvador, Paraguay and Uruguay. Selected clusters contemplate a wide range of sectors, including natural resources, traditional industries, complex activities and specialized services. For each cluster, we trace collaboration networks connecting firms and support organizations and combine social network analysis with logistic regression techniques to estimate the determinants of innovation. Our findings confirm that overall network connectivity as well as direct links with other firms and organizations are crucial factors for small national companies to innovate, particularly to carry out R&D. However, these factors have little or no influence on innovation developed by large firms and multinationals. This evidence suggests that cluster policies in developing countries should take duality into account, designing measures that preferably support local small firms.

Keywords: Dualism, clusters, developing countries, social network analysis, Latin America.



Agglomeration, Vertical Disintegration and Specialization in the Knowledge Intensive Business Services: empirical evidence on the Italian provinces

Marinella Boccia. Department of Economics and Statistics (DISES), University of Salerno. Italy. mboccia@unisa.it

Anna M. Ferragina. Department of Economics and Statistics (DISES), University of Salerno. Italy. aferragina@unisa.it

Gulzhan Markabayeva. PhD student) Department of Economics and Statistics (DISES), University of Salerno. Italy. gmarkabayeva@unisa.it.

Abstract

The theoretical and empirical analysis about Knowledge Intensive Business Services (KIBS) represents an innovative portion of the research activity of the last 15 years because previous attention was especially devoted to the manufacturing services.

KIBS have become of particular importance because they provide knowledge-intensive intermediate inputs to private and public organizations and represent a guarantee of competitiveness in the knowledge-based economy. Moreover, they are characterized by specific production and innovation processes, which require close interaction with their clients and have the potential to spur innovation in other economic sectors (Di Giacinto et al., 2020). An increase in the demand of KIBS services by most firms both in Italy and around the world has developed during the last years.

The researchers have been interested in several dimension and relationship. Some Works investigated on the impact of BS (business services) on growth rate of employment, valued added and productivity (Francois, 1990; Kox and Rubalcaba, 2007a, 2007b). Other studies have considered the impact on innovation and the differences between KIBS and manufacturing, considering several independent variables such as R&D expenditure, R&D cooperation, external sourcing activities and so on (Teixeira and Santos, 2016). Meanwhile, Cainelli et al. (2006) following the literature related to Schumpeter (1934; 1942) and to Schmooklerian theories (1962; 1966) explore the two-way dynamic link between innovation and economic performance in services.

Besides, the effect of an increase in urban population on vertical disintegration in the business services has been investigated more recently (Antonietti and Cainelli, 2016; Meliciani and Savona, 2015; Gallego and Maroto, 2015), such as the geographic localization and productivity of KIBS firms in Italy (Di Giacinto et al. 2020).

In line with this literature, this study accounts for the determinants of sectoral specialization in knowledge-intensive business services, measured by the relative share



of employment in KIBS across the Italian provinces-NUTS3 with respect to the reference of the Italian economy, using ISTAT province level panel data from 2012 to 2017.

In our analysis the impact of agglomeration economies, intermediate demand and Hirschman linkages between KIBS and their users and innovation activities will be considered. Each one of these determinants will be identified by such variables (i.e. localization and urbanization economies; inputoutput linkages; information and communication technology, public expenditures in research and development and human capital), which will be the main proxies adopted in our empirical analysis.

The idea is to see whether increases in agglomeration and vertical disintegration, in addition to knowledge base and absorptive capacity of provinces (controlling for the presence of these factors in neighbouring provinces), push firms to specialize in KIBS. Spatial models will be employed in order to get spatial effects in explaining province specialization in KIBS.

This paper contributes to the literature on the agglomeration economies with regards to KIBS in Italy exploring the province and the subsector dimensions. In fact, to our knowledge there are no papers that investigated on this topic considering all the Italian Provinces allowing the reader to capture the differences among them. In addition, given that among KIBS there are the Technological Knowledge Intensive Business Services (T-KIBS)-related to scientific and technological knowledge such as R&D services, engineering services, computer services-and the Professional Knowledge Intensive Business Services (P-KIBS) who are more traditional professional services legal accountancy, and many management consultancy and marketing services, our analysis also will try to consider sub sectors of KIBS services capturing the differences.

More in detail this analysis tries to answer to the following questions.

Are the urban spatial structure and the KIBS location related? Considering eight KIBS sectors: is there a relationship between their activities and localization economies? What are the other determinants of specialization in KIBS and how these determinants affect each one of eight sector of specialization?

Considering spatial dependence, we note that the coefficient of the lagged dependent variable is significant, this underlying the importance of clustering effects among the determinants of KIBS specialisation in some subsectors.

The preliminary results obtained considering the KIBS and each 2-digit subsector, show evidence that localization and urbanization economies, input-output linkages, information and communication technology positively affect specialization in KIBS within the provinces.



Keywords: Agglomeration Economies; Regional specialization Knowledge Intensive Business Services; Technological Innovation; Spatial Models.



Formal clusters supporting small firms' internationalization: a case of public-private interaction

Elisa Carloni Ph.D. Candidate in Global Studies: International Economic Policy, Business and Governance. University of Urbino, Italy. e.carloni8@campus.uniurb.it

Abstract

Clustering processes are deemed a relevant phenomenon for economic and industrial development, and their nature, conceptual development and importance for regional and economic growth have received considerable attention in the last decades (Lazzeretti et al., 2014; Hervás-Oliver et al., 2015). A growing field of literature has examined the impact of clusters and networks in firms' internationalization processes (Johanson and Vahlne, 2009; Snehota, 2011; Kowalski, 2014). In particular, a strong effort has been placed on the changes in the processes of knowledge transfer and exchange within clusters (Hervas-Oliver and Albors-Garrigos, 2009; Belussi and Sedita, 2012; Alberti and Pizzurno, 2015). Based on these assumptions, cluster-related initiatives, policy efforts, and initiated projects at both national and regional levels have been settled (Obadić, 2013). Raising prominence has been given to the emergence of "formal clusters", defined as "*geographic concentrations of actors characterized by formal governance structures and the formal membership of firms and other institutions*" (Colovic and Lamotte, 2014: 451).

In particular, in recent times, specific projects have been activated to facilitate formal cluster firms' engagement in international markets and to boost regional development (i.e., Fourth European Cluster Policy Forum, 2019). These projects have often resulted in a strict collaboration between public and private actors, and in the exchange of market and product knowledge related to internationalization. Thus, while the issue of cluster's support to firms' internationalization has been widely investigated, less emphasis has been placed on the phenomenon of formal clusters and how they interact with firms for internationalization. Despite the increasing relevance of these processes, formal clusters' role in supporting the internationalization of firms is still rather unexplored, with only a few exceptions (see Colovic and Lamotte, 2014).

By introducing formal cluster initiatives, this paper presents and discusses a case study on the role of formal clusters in supporting small firms' internationalization processes. In particular, by taking a public-private interaction perspective, it aims at providing an understanding of how international business knowledge (which includes both market and product knowledge) is exchanged within an internationalization project. Notably, the research question addressed is the following:



Sub-questions can be identified along the three dimensions of the ARA (Actors – Resources – Activities) framework (Håkansson and Snehota, 1995; Håkansson et al., 2009), developed within the IMP tradition, and concern the role played by the different actors within the project, the activities and interaction patterns emerging, the impact of interaction through the project. The core mission of IMP research consists of fully understanding the interactive business landscape (Håkansson et al., 2009). The general idea is that all organizations are embedded in relationships and are dependent on others in different contexts (Håkansson and Snehota, 1995). Accordingly, the idea of interaction as the core process of the business landscape has been developed (Ford and Håkansson, 2006). Interaction shapes and transforms actors, activities, and resources (Ford et al., 2010) and, thus, “no business is an island” (Håkansson et al., 2009; Håkansson and Snehota, 2017).

Therefore, given the pertinence of relationships and networks to the issue addressed in this paper, it is posited that the IMP approach – in particular its perspective on place and on public-private interaction – is well suited to understand the variety and complexity of interaction in a project for internationalization. Policy efforts and institutional projects have been settled on the geographical idea of clusters, which, however, does not account for aspects such as networks, absorptive capacity, and heterogeneity of place related-features (Alberti and Pizzurno, 2015; Giuliani, 2005; Milanese et al., 2016). On this line, different studies within the IMP approach have argued for the importance of interaction in a network-like structure that binds places together (Waluszewski, 2004; Håkansson and Waluszewski, 2020). Traditionally, the focus on micro-interaction processes has been neglected in favour of a region-centric perspective (Eklinder-Frick, 2016; Eklinder-Frick and Linné, 2017). In this sense, the adoption of an IMP lens – having in mind studies on heavy development processes and interactions taking place in business networks – is of utmost importance to understand the embeddedness of international networks, which are developed beyond the geographical boundaries of a cluster. The adoption of the IMP conceptual and analytical framework is also in line with recent calls for pictures of the contemporary business world, which include the interaction between private companies and public bodies and for in-depth analysis of the features of public-private interaction (Munksgaard et al., 2017; Waluszewski et al., 2019; Kronlid and Baraldi, 2020).

This paper adopts a qualitative methodology, developing a single case study of TRIIP (The Regional Innovation Internationalization Project), namely an international business project, implemented by Future Position X (hereafter FPX). FPX is a Swedish formal cluster initiative which is among the leading European Clusters for its innovative policy practices. The unit of analysis is a project, which can be considered as “*temporary resource constellation and activity pattern in which the actors form a distinct logic and develop new solutions in relation to each other*” (Ingemansson Havensvid et al., 2016: 86) and where “*network relations emerge [...] and get activated*” (Manning, 2017:1401). Therefore, accounting for a specific project can help to understand the interactions



occurring within the project, and those going on across its boundaries and involving actors, that play different roles and utilize different resources (Ingemansson Havenvid and Linné, 2016).

The choice of the formal cluster and project came down to distinct criteria. Firstly, FPX adheres to the definition of formal cluster as employed by Colovic and Lamotte (2014); secondly, it has been officially recognized and accredited by the Swedish government; thirdly, TRIIP and its activities have been acknowledged as good practice 1 in the context of the Interreg Europe Programme (see Compete In project). Moreover, FPX is chosen as the empirical setting for its nature, as it has been initiated and includes among its owners and board members public actors (university, municipality, county council, government agencies). Also, activities are mainly financed by the Region, the Swedish government agency for R&D *Vinnova*, the EU, and by the city of Gävle. The cluster works according to market logics, but its activities and projects mainly have a public purpose and involve quadruple helix actors, including university, industry, government, and public actors. The cluster initiative does not fully adhere to the traditional definition of public actor. However, given its features (i.e. ownership, goals, financing, nature of its activities) and the role it plays in the project in focus, it can be considered as an hybrid actor, which plays a public role within this context and which works in synergy with other public actors (as incubators and science parks).

The analysis highlights the role of formal clusters as supporter and "accelerator" of internationalization processes, thus confirming critical findings of the literature on the relevance of networks in internationalization for small firms (Ciabuschi, 2006; Felzensztein et al., 2019; Johanson and Vahlne, 2009).

Through the analysis based on the ARA framework, it is possible to get a deeper understanding of the role played by key actors, of the nature of activities carried out, and of the resources at stake throughout the process. Concerning actors, on the public actors' side, the role played is that of orchestrator, supporter, and financier. On the businesses' side, participants assumed the role of customers. They displayed various degrees of interest and commitment, deriving from heterogeneity in industry, maturity, experience, giving rise to a leader-follower pattern. About the activity layer, knowledge-related activities have occurred at multiple levels, inter-organisational, intra-project, inter-projects, through different timings and typologies of activity (i.e., workshops, face-to-face coaching, trips, and meetings with experts). Regarding the project's impact in terms of resources, the main resources at stake were the combination of knowledge, complementary capabilities, and financial incentives.

Accounting for an interaction perspective also allows shedding light on the complexity of the internationalization project within a formal cluster initiative both with respect to the effects over the broader business network of firms and organisations, and to the less positive and more problematic aspects of the role of formal clusters, which are



often neglected. In particular, the analysis shows some interesting features of public-private interaction mechanisms for knowledge exchange by highlighting the diversity and interrelation of such mechanisms, characterized by a combination and integration of formal (or top-down and deliberate) and informal (or bottom-up and emergent) mechanisms. Given the complexity of the public-private interface, the analysis suggests the need for room for flexibility and adaptability in knowledge-related activities to ensure the dynamic creation and exchange of IB knowledge.

This research also supports literature on projects as a distinct mode of internationalization for both firms at their first internationalization and project participation experience, as well as for more mature firms, which already internationalized autonomously. In particular, the role of local networks on internationalization is emphasized.

The paper is organized as follows. First, the cluster approach is discussed and integrated with studies within the IMP framework related to place and relationships. After this discussion, a brief overview of existing studies on public-private interaction is introduced. Section three addresses the research methodology adopted. Following, the project in focus is described, and the empirical findings are presented. In the fifth section, the main results of the empirical analysis are discussed. The last section outlines conclusive remarks; it highlights research limitations; it points out the main contributions and implications of the study for both policy and practitioners.

Keywords: Clustering, Formal clusters, International business knowledge, Knowledge exchange, Public-private interaction.



How do Clusters Foster Sustainable Development? An Analysis of types of cluster governance for environmental improvements in SMEs to SDGs

*María Nieves Fernández López. University Complutense of Madrid (Spain).
mnmadr@hotmail.com*

Abstract

Sustainable development is one of the fundamental and most important objectives of the worldwide policy. The purpose of this study is to find an answer to the following questions: How can clusters contribute to sustainable development. This article develops such a conceptual framework drawing on the literatures on cluster governance, corporate social responsibility (CSR), small and medium enterprises (SMEs), Green Human Resource Management (GHRM), and Change climate as they relate to the developing the Sustainable Development goals (SDGs). The article argues that environmental improvements in SMEs can be achieved and depend of cluster governance to foster sustainable development. Improvements in SME can be achieved through three basic types of cluster governance: legal enforcement, supply chain pressure, and voluntary engagement in CSR to sustainable development and developing SDGs. The article put forward a framework that can be useful for both academics and practitioners as they seek to reflect on the interconnectedness of these themes from a research, policy, and practice perspective.

Keywords: Cluster governance, SMEs, CSR, Sustainable Development, SDGs.



Ecosystems of Transformational Social Entrepreneurship in Communities to Territorial Growth: Social Innovation to a New Model of Social Responsibility for Sustainable Development

María Nieves Fernández López. Dept. of Organization and Marketing. Universidad Complutense de Madrid. Spain. mnmadr@hotmail.com

Abstract

The objective of this article is to define a theoretical framework that allows to build an approach to the definition of social innovation (SI) in relation to the new model of sustainable development (SDGs), proposing a SWOT analysis that conceives social innovation as a good strategy to face the current socio-economic challenges (unemployment, poverty, climate change, social exclusion, etc.). In this context the generation of transformational social entrepreneurship ecosystems can be the answer to public administration, ONGs, foundations, social entrepreneur, and people that want changes and look at solutions to social problems in effective, efficient, sustainable and right way. This new paradigm of social responsibility (CSR) for sustainable development is based on a production model based on innovation with a social and inclusive dimension. Social innovation emerges as an alternative to traditional production models, where social entrepreneurs, through open collaboration, are able to make innovative and sustainable initiatives by producing goods and providing services capable of raising the quality of life of citizens in communities to territorial growth.

Keywords: Ecosystems, Social innovation; CSR; SDGs, social inclusion



Spatial residential patterns of workers in the creative industries: an exploratory analysis for the city of Madrid²

Simón Sánchez-Moral. Department of Geography, Complutense University of Madrid

Alfonso Arellano. Department of Foundations of Economic Analysis I, Complutense University of Madrid

Roberto Díez-Pisonero. Department of Geography, Complutense University of Madrid

Abstract

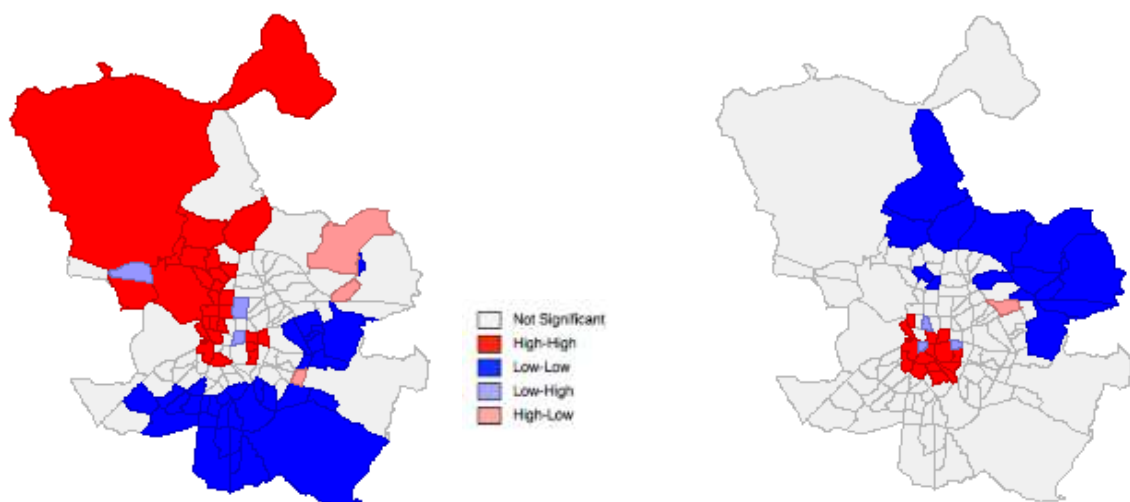
Creative industries have been considered strategic within the European regional development model (European Commission, 2010a, 2010b). These activities are considered source of regional growth and employment, as well as of multiplier effects for other activities and a boost to economic and social innovation (UNCTAD, 2008; Cooke and Lazzeretti, 2008; Boix, Capone, De Propris, Lazzeretti, Sanchez, 2016). Furthermore, the presence of workers of the creative industries have been linked to the upgrading of the local economy, the cultural life and the institutional frameworks (Shapiro, 2006; Sánchez-Moral, 2017).

Cities that do not meet the residential requirements of creative workers may face migration to other places, affecting not only the sustainability of creative industries but also global competitiveness of cities (Tomaney and Bradley, 2007). In this context, it is essential to understand the residential patterns of these workers and the guiding factors, including “hard factors”: i.e. employment opportunities, distance to workplaces, housing market conditions; as well as “soft factors” and lifestyles: i.e. socio- demographic diversity, cultural amenities and social networks (Glaeser, 2005; Lawton, Murphy and Redmond, 2013; Miguélez and Moreno, 2014). Nevertheless, while the location of firms has been extensively studied in Spain (see for example: Méndez, Michellini, Prada and Tébar, 2012; Coll-Martínez et al., 2017), the residential location of the workers has deserved less attention. In this regard, recent studies underline the heterogeneity among creative industries workers (Bontje, Musterd and Sleutjes, 2017), it being possible to hypothesize an unequal influence of such factors according to certain personal and professional characteristics.

² This work is part of the R&D project CITiTALENT (CSO2016-74888-C4-4-R, AEI/FEDER,UE).

This study is based on the records of workers affiliated from to the Social Security, corresponding to the city of Madrid. The definition of creative industries used in this work is inspired by the proposal of UNCTAD (2008): Editing activities (NACE II: 581, 582, 631), Cinematic activities (591, 592), Radio and Television (601, 602), Architecture (711), R&D (721, 722), Advertising (731), Other professional activities (741, 742, 743), Art and shows (900). Based on this information, we first analyse the residential location patterns through the employment location quotients at a neighbourhood level, according to workers’ socio-demographic and professional characteristics. Secondly, we study the spatial associations of the residential locations and neighbourhood characteristics by means of spatial regression models.

Fig. 1. *Spatial residential patterns of workers in R&D (left) vs. artists (right) in Madrid.*



Source: Social Security-Madrid City Council (2016).

Our study confirms that the workers in creative industries would have a particular residential spatial behaviour, something that in other cities has been used to identify them as members of a fraction of the new urban middle class (Boterman, Manting and Musterd, 2017). Nevertheless, we have confirmed the strong heterogeneity of this workforce, especially when considering the workers’ professional profiles. Thus, it highlights the residential location of workers in R&D activities in residential suburbs with a high standard of living and environmental quality to the West and North of the city; ahead of the preferential location of art and entertainment workers in the historic centre, where a high density of creative activities is reached, as well as bars, restaurants and cultural amenities.



At the same time, the exploratory analysis confirms that creative workers tend to locate their residence in high-priced neighbourhoods, with density of creative companies and institutions, which can be linked to the explaining factors of the proximity to the workplace; while cultural amenities and social interaction would also have a positive but unequally significant influence according to the groups of workers analysed. All these results have important implications for urban policy makers.

Keywords: creative workers, residential patterns, neighbourhood characteristics



Building knowledge and catching-up by engaging in backward and forward global value chains

Claudia De Fuentes. Associate Professor. Sobey School of Business, Saint Mary's University. Canada. claudia.defuentes@smu.ca

Jason Rhineland. Assistant Professor, Saint Mary's University. Canada. jason.Rhineland@smu.ca

Jahan Ara Peerally. Associate Professor, HEC Montreal. Canada. jahan.peerally@hec.ca

Abstract

This study explores whether the engagement of developed and developing countries in global value chains (GVCs), and whether the evolution of their forward and backward GVCs' structures across time, indicate a convergence or divergence in their levels of technological capabilities. We use two trade in value added indicators for the period of 1995 to 2015, to proxy for 37 developed and 27 developing countries' levels of technological capabilities. We apply the t-distributed Stochastic Neighbor Embedding machine learning algorithm to reduce the dimensionality of our observations. Our results indicate that the distribution of technological capabilities, and thus the rates of knowledge accumulated, are uneven across countries. Our findings also reveal that there is an overall trend of developed and developing countries converging in both their backward and forward GVC structures. The bulk of that convergence points to the important role of the geography of the GVCs in that process.

Keywords: Backward global value chains, forward global value chains, knowledge, globalization, developed countries, developing countries.



Are the secrets of industry in the air of NYC? The importance of geographic proximity between digital startups and venture capital funds in the New York City cluster

Hélène Daccord, ESSEC Business School - Princeton University, b00528261@essec.edu

Abstract

Venture capital funds are central players in the New York venture ecosystem. Not only do they provide financial capital, but introduce them to strategic networks, embed them in located ecosystems and share knowledge with them. Given the uncertainty of the venture market, especially in the digital sector, venture capitalists prioritize qualitative criteria to select startups. This research project demonstrates that relations of proximity in the cluster are a matrix to transform uncertainty into risk. Both private equity and venture capital funds take for granted that face-to-face interactions help them better assess the potential of the startup they consider funding. Once the deal sourced, venture capital funds tend to be located close to their backed startups and regard geographic proximity as a way to minimize their monitoring costs and to maximize the agglomeration externalities. Although some resources are perceived as stemming from a shared geographic proximity and privileged interactions, they actually stem from knowledge spillovers of the cluster. Investors and entrepreneurs tend to overestimate the importance of proximity in their choice of investment. Based on research interviews, this research project aims to offer new research perspectives for investment and location strategies, but also to understand more precisely the clustering process, which could be valuable for policy makers, investors or entrepreneurs. This research project has broad implications to inform the limits of the digital transition in economic clusters and gives perspectives on the trajectories of innovative places with the development of ICT, which are burning issues of our times.

Keyword : Proximity, digital innovation, venture capital, startup, New York.

Acknowledgement

I would like to thank Professor Alain Rallet, Paris-Sud University, for his indispensable help during my research project and his rich expertise on my subject, Professor Eduardo Morales, Princeton University, and Professor Josh Lerner, Harvard Business School, for their documented help. For comments, I thank David Markson, Hugues le Bras, Philippe Berdugo, Vladimir Colas, Guillaume Bonnet, Alban Denoyel, Elsa Conesa, Rob Hellauer, Mehmet Tuncer, Clifton Smith and anonymous interviewed professionals. This research project was supported by the Geography Department of the Ecole Normale Supérieure Ulm and the ESSEC Business School.



The relationship between the Structural Aspects of the Network in Innovation Activities: A Study in the Brazilian Wine Cluster of Serra Gaúcha

Vitor Klein Schmidt. Federal University of Rio Grande do Sul, Brazil. vitorks1993@hotmail.com
Aurora Carneiro Zen. Federal University of Rio Grande do Sul, Brazil. aurora.zen@ufrgs.br
Bernardo Fernandes Soares. Federal University of Rio Grande do Sul, Brazil. fernandes.bernardo.soares@gmail.com
Cristina Boari. University of Bologna, Italy. cristina.boari@unibo.it

Abstract

Innovation occurs through the recombination of different internal or external knowledge (Bathelt, Malmberg, & Maskell, 2004; Vicente, 2018). In this context, innovation is related to the coepetition process and the flow of knowledge beyond the frontier of firms. The cluster approach seeks to explain the impact of regional dynamics on the "firms' performance. This approach highlights the impact of geographical proximity in generating regional competitive advantages. The generation of positive externalities and increasing returns emerge from sharing a specialized production structure in a given technological field (Holm & Østergaard, 2015).

The understanding of clusters as networks of companies and interconnected institutions has grown in recent years (Lazzeretti, Capone, Caloffi, & Sedita, 2019). Then, clusters are a set of nodes (firms) and connections (ties) within a region and a technological field (Crespo, Suire, & Vicente, 2014; Suire & Vicente, 2014; Vicente, 2018). The networks formed by the firms facilitate the recombination and transmission of knowledge to the other membersN (Giuliani & Bell, 2005; Lipparini, Lorenzoni, & Ferriani, 2013). The innovative collective capacity of a cluster is directly related to its ability to encourage firms to disseminate and recombine different skills and knowledge (Crespo, Suire, & Vicente, 2015).

The different metrics of a network have sociological meanings and contribute to understanding the collective processes of knowledge diffusion and innovation in clustered firms. In this context, this research aims to analyze the relationship between the structural aspects of the Network and "firms' innovation activities. We conducted a survey in Wine Cluster of Serra Gaúcha (WCSG), in the Rio Grande do Sul State, South of Brazil. Brazilian wine activity is concentrated mainly in the WCSG, that responding for more than 80% of wine production of Brazil. We selected 56 wineries to be part of this study. The list of firms was reviewed and validated by three groups of professional experts. The analysis was conducted in three main steps. An Exploratory Factor Analysis was conducted in the first step, based on interval questions related to the Innovation Activity construct, which was used as a dependent variable. The second step consists of mapping the knowledge exchange networks between wineries; such mapping took place through Social Network Analysis.



Finally, we tested the relationship between innovation activity and network metrics through different linear regression techniques and ensemble models.

Keywords: wine region, Brasil, cluster network



Clusters life cycle and multilevel orchestration

Bruno Anicet Bittencourt, Universidad de Vale do Rio dos Sinos, brunoabittencourt@gmail.com

Aurora Carneiro Zen, Federal University of Rio Grande do Sul, aurorazen@gmail.com

Fiorenza Belussi, Università di Padova, fiorenza.belussi@unipd.it

Vitor Schmidt, Federal University of Rio Grande do Sul, vitorks1993@hotmail.com

The clusters are recognized for their social and economic impact for their firms and for the regions where they are inserted. However, recently, the discussions about the decline are increasing, in function of the lock-in effect since many clusters in the world have significantly decreased in the last years. The orchestration emerges as an alternative to manage and to avoid their declines. Therefore, the present paper seeks analyze how does the orchestration influence on the cluster's life cycle. For that, an exploratory study was performed with longitudinal perspective in the wine cluster of Serra Gaúcha, Brazil. The cluster was chosen because it has gone through and overcome several crises over its trajectory and because of its social and economic importance for the region. As main result of the research, a proposition of a model of multilevel orchestration was developed.

Keywords: regional clusters, innovation networks orchestration, cluster life cycle, lockin effect



Is the Northern Powerhouse Strategy maximising the power of the North of England? An approach by urban ownership links between firms

Natalia Zdanowska. Centre for Advanced Spatial Analysis, University College London, London, United Kingdom UMR CNRS 8504 Géographie-cités, Paris, France. n.zdanowska@ucl.ac.uk

Abstract

According to Sharon White, then (20th January 2015) second permanent secretary at HM Treasury, the United Kingdom is “almost the most centralised developed country in the whole world” (Agbonlahor, 2015) thus identifying one of the most important issues facing the UK. In spite of many decentralisation initiatives proposed by the government to address the centralisation of the English state and to devolve power to city regions (Hambelton, 2017), sub-regional governance remains subordinate to the centralised model of decision making. The Northern Powerhouse is a central government proposal, albeit one with strong local support. It was launched in 2010, to boost economic growth in the North of England particularly in the core cities of Manchester, Liverpool, Leeds, Sheffield, Hull and Newcastle. It corresponds to a vision of a globally connected and competitive Northern Economy, exploiting strengthened connections between and within the Northern cities (Northern Powerhouse, 2016). The Prime Minister Boris Johnson pledged support for the Northern Powerhouse saying “we are going to maximise the power of the North with more mayors across the whole of the north” (Johnson, 2019).

This paper explores the potential and limits of the Northern Powerhouse strategy in terms one of its main goals: strengthening interactions between Northern cities of England. The original contribution of this paper is to approach these issues within the system of cities framework (Berry, 1964), where the position and dynamics of cities in their spatial and socio-economic dimensions can be considered in the context of their interactions with other cities (Pumain, 1997). A particular focus will be on the city of Manchester, to evaluate its regional role as the second ranked economic centre of the UK. The research draws on peripheralisation as a key theoretical concept for understanding the effect of policies on development capacities in the peripheral places of geographical spaces.

We investigate transnational firm networks defined by ownership links between firms at city-level, using the Bureau Van Dijk *ORBIS* and *AMADEUS* databases. We question how Manchester’s position has evolved within its inter-urban economic networks in a highly centralized city-system, following the launch of the Northern Powerhouse initiative. The analysis reveals that between 2010 and 2016 interactions are characterized by a relatively weak increase in the intensity of regional patterns, although a shift towards more innovative specialisation of cities has occurred. These results permit



an assessment of the achievements of the Northern Powerhouse since 2010 as a regional policy.

Keywords: Northern Powerhouse Strategy, cities, system of cities, interactions, ownership networks, United Kingdom



Searching through the Haystack - The relatedness and complexity of prioritized industries

Jason Deegan. University of Stavanger Business School

Tom Broekel. University of Stavanger Business School

Rune Dahl Fitjar. University of Stavanger Business School.

Abstract

This paper examines which industries regional policy-makers try to develop in regional innovation strategies, focusing in particular on the relatedness and complexity of these industries. We build on the economic geography literature advising policy-makers to target related and complex industries, as exemplified in Balland, Boschma, *et al.*, (2018), and assess to which extent regions follow this advice. The paper draws on data from the smart specialisation strategies of 106 NUTS 2 regions across Europe. While regions are likely to rely on the dimensions of relatedness and complexity in the selection of priorities, they tend not to choose those economic domains which are both complex and related. Instead, other factors, which are inconsistent with the logic of smart specialisation, exhibit a considerable influence on the selection of priorities. Regions tend to prioritize industries with large existing employment, undermining the aims of the policy to promote diversification into new industries. They also tend to select the same priorities as their neighbors, undermining the idea of a division of labor across regions implied in smart specialization. Overall, these findings suggest that smart specialization may be considerably less place-based in practice than it is in theory and that there exists a need for clearer policy logic to inform regions' priority choices, given the importance of priority selection in smart specialisation strategies and in regional innovation policy more broadly.

Keywords: Smart Specialization, Regional Policy, Complexity, Relatedness, Innovation Policy, European Cohesion Policy



Exploring the Artificial Intelligence Ecosystem. Theoretical framework and critical issues

Luciana Lazzeretti. Department of Economics and Management, University of Florence

Abstract

The article represents a theoretical contribution aimed to develop a framework for discussing the Ecosystem of Artificial Intelligence. In particular, four interrelated concepts are debated: Artificial Intelligence (AI), Machine Learning (ML), Big data and Bias. The analysis is based on the relevant literature on the topic and traces back how the new paradigm of AI has been developed. The main theoretical issues afforded by the analysis are the following.

First, a description of the evolution of the concepts of AI is debated. The purpose is to retrace the different definitions proposed since the early days of research on AI, which defined the concept broadly, to the latest elaborations related to the concepts of ML and the big data approach.

Second, this evolution is critically discussed referring to the concept of algorithm and bias. ML algorithms are the heart of AI, however, they should be not impartial and should hide erroneous assumptions that affect the results produced by the machines, the so-called bias. These elements should be carefully considered when the topic of AI is discussed as they bring out the intrinsic limitations of an approach based exclusively on the inference from data.

Third, the core of the analysis is devoted to discussing the AI ecosystem. On the one hand, the analysis wants to define its borders and composition. On the other hand, the main characteristics of the paradigmatic innovation of AI are highlighted.

Results evidence the importance of paradigmatic innovation by identifying ten peculiar characteristics. Moreover, opportunities and limitations emerge related to the new era of the digital revolution. The contribution of the article is to critically synthesizing and debating a complex and fragmented theoretical context and inviting to reflect on the changes in economy, culture and society that occurred by the advent of this new paradigmatic innovation.

Keywords: Artificial intelligence, machine learning, big data



Digital strategy in the post Covid-19: the case of Florence museum cluster

Stefania Oliva and Luciana Lazzeretti. Department of Economics and Management, University of Florence

Abstract

The proposed analysis aims to investigate the response of Florence creative city to the Covid-19 emergency following the resilience approach. The Covid-19 emergency began in early 2020 and exploded globally in March 2020, indistinctly affecting the global economies. In addition to the health emergency and the consequent loss of human lives, the pandemic had important economic and social implications, connecting with other megatrends such as globalization and sustainable development. In social terms, it raised questions related to inequality, cohesion and social justice. In economic terms, it produced the need for different economic sectors to transform and adapt in response to the loss of competitiveness consequent to the emergency. The framework of regional resilience (Simmie and Martin, 2010; Martin, 2012) has given rise to several studies concerning the recovery from both economic and financial crisis and to environmental catastrophes and climate change. In this case, it can be crucial in understanding the different phases of response in the post Covid-19.

After describing the emergency management operations adopted by the metropolitan city of Florence, the analysis focuses on the Florence museum cluster (Lazzeretti, 2004) to understand the impact of the Covid-19 emergency and how it has recovered and reorganized after the emergency. In particular, through an analysis of secondary data on social media, the analysis wants to understand the digital strategy implemented by the actors of the clusters in the recovery and reorganization phase. Results may help to understand if creative and cultural sectors can easily transform and recover in response to an emergency scenario. Moreover, it can be useful to understand how digital innovation influences the response of cultural organisations to global crises considering that these phenomena are geographically heterogeneous and different dynamics may influence the capacity to overcome shocks.

Keywords: digital strategy, Covid-19, creativity cluster, Florence



Open innovation and smart manufacturing. How openness boosts innovation in I4.0.

Capone F., Innocenti N., Oliva S.

Industry 4.0 represents a current trend in automation technologies and, supported by the progress of Information and Communication Technologies (ICT) and data storage, is considered by many to be the Fourth Industrial Revolution (Xu, Xu & Li, 2018; Lombardi, 2016;). It consists of a new industrial scenario in which the convergence of various emerging technologies, strengthened by the Internet of Things (IoT), results in physical-digital systems capable of facing the complexity of production and creating greater value for companies (Zhou, Liu & Zhou, 2015; Hermann, Pentek & Otto, 2015).

Given the importance that Industry 4.0 has assumed, there has been growing academic research on Industry 4.0 with the aim of providing insights into issues, challenges and solutions related to the design, implementation and management of Industry 4.0 (Hervas et al., 2019; 2020; Bortoluzzi et al., 2002; etc.).

However, few studies provide empirical evidence on the innovation process in this area and in particular investigating the role of collaboration and openness in I40, leading to the question: how do firms adopt OI dynamics for innovation in Industry 4.0?

To answer this question, the following paper is based on the concept of Open Innovation, developed by Chesbrough (2003), which provides for the opening of the innovative process of companies to external sources of knowledge. It is the overcoming of the closed innovation model, according to which the entire innovation process is carried out by the R&D department, without the influence of external actors.

The paper aims to investigate the relevance of the characteristics of companies on innovative performance in Industry 4.0, with particular reference to the concepts of breadth and depth of openness (Laursen & Salter, 2006; Leiponen & Helfat, 2010; Capone and Innocenti, 2020).

A survey was developed to investigate the role of openness of the Industry 4.0 innovation process. Thus a regression analysis was carried out to explain the relationship between the openness of companies at the level of sources of knowledge and their innovative performance in I40.

The empirical results highlight the relationship between the level of openness and innovative performance. In particular, it is discovered that the breadth and depth of openness are curvilinearly related, taking an inverted U-shape, to Industry 4.0 innovation.

Keywords: Industry 4.0, survey, ICT



The role of inventors networks and variety for breakthrough inventions. A USPTO patent study in Italy from 1971-2010

Innocenti N., Capone F., Petralia S., Crescenzi R., Lazzaretto L.

Abstract

In recent innovation literature, there are several studies analysing the role of inventors networks for local inventions productivity. This line of research has developed particularly in recent years thanks to new available data sources and the use of algorithms that allow the disambiguation of inventors (Ventura et al., 2015; Fleming et al. 2011; Li et al., etc.) and the digitization of patents since the 1800s (Petralia et al., 2016).

In particular, the role of inventors networks for regional innovation has gained considerable interest with recent works in journals of Regional Sciences, Economic Geography and Innovation studies (Breschi & Lenzi, 2016; Breschi & Lissoni, 2009; Lobo & Strumsky, 2008; Strumsky & Thill, 2013; van der Wouden & Rigby, 2019; Innocenti et al., 2019; Capone et al., 2020).

This last stream of research developed since the early 2000s has found a new ascent with the study of networks of inventors and how inventor networks promote the exchange of knowledge at the local level and therefore the innovative productivity (Acs et al., 2002; Singh, 2005; Fleming et al., 2007a, b). With the re-birth of this new stream of research, the discussion shifted from a focus on firms to urban areas and regions, then involving regional and urban sciences (Lobo & Strumsky, 2008; Strumsky & Thill, 2013; Breschi and Lenzi, 2016; Innocenti et al., 2019).

Furthermore, the hype developed from the technological “relatedness” concept has allowed to broaden this field of study by analysing how (diversified) places with a higher technological relatedness could excel in the production of inventions (Ebersberger, Herstad, & Koller, 2014; Van der Wouden and Rigby, 2019; Van der Wouden, 2020; etc.).

The aim of the present research is to investigate whether the structure of knowledge networks and the variety of the local industrial structure are important for regional innovation and if there are different results according to overall innovations or breakthrough innovations productivity. The hypothesis is that local related variety enhances the overall innovation rate, while local unrelated variety supports the rate of breakthrough innovations.



The paper investigates USPTO co - patenting activities in the Italian provinces in a long period span during the period 1971-2011, utilising panel regression techniques with year and province fixed effects and constructing inventors networks on patent collaborations in the 103 Italian provinces divided in four periods (1972-1981, 1982-1991, 1992-2001, 2002-2011).

The paper assesses which industrial structure of a region is more suitable to favouring local innovativeness using the method of related variety and to which extent the relation between knowledge network structure and industrial structure favours the regional production of patents and breakthrough patents.

The choice of using the USPTO database is motivated by two main reasons. First, the patenting in America being more complex and expensive can allow considering only the best innovations of the Italian inventors. Secondly, it is the only database that presents homogeneous data, partly georeferenced and disambiguated for such a long period.

The paper is organized as follows. The next section describes the theoretical framework and development of the hypotheses. Section 3 presents the data source and the general evolution of the Italian invention productivity in USPTO from 1971-2011. Section 4 presents the method used for the model estimations and shows the results. Conclusions and discussions end the paper.

Keywords: inventor, patent, network



The Marshallian industrial district as a living innovation machine: modelling technological innovation in space and time variable-geometry units using big data and machine learning

Rafael Boix-Domenech. Departament d'Estructura Econòmica. Facultat d'Economia, Universitat de València. rafael.boix@uv.es

Vittorio Galletto. Institut d'Estudis Regionals i Metropolitans de Barcelona. Universitat Autònoma de Barcelona. vittorio.galletto@uab.cat

Fabio Sforzi. Dipartimento di Scienze Economiche e Aziendali. Università degli Studi di Parma. fabio.sforzi@unipr.it

Abstract

In this paper we investigate how the iMID effect changes using dynamic territorial units that modifies their geographical boundaries and typologies over time. The article raises two questions: How does the iMID effect evolve when space-time dynamic units are used? How can we explain and predict the evolution of the iMID effect in space-time? The paper focuses on the evolution of the iMID effect in Spain during the period 1991–2014.

The paper makes three contributions. First, it is one of the few researches on the geography of innovation that uses a variable and adaptive geometry of territorial units and typologies that changes over time, closing a relevant gap in the empirical literature. Second, we propose a methodology that allows to decompose the changes in the innovative intensity of the MIDs according to their endogenous characteristics and according to their geographical and typological transformations. Third, we use big data and machine learning methods to explain and predict the evolution of the innovative intensity in the LPSs.

Previous research has proven the existence of the iMID effect in Spain during a long time period (Boix, Galletto & Sforzi, 2019). In that research, the unit of analysis - the local production systems (LPSs) - has been considered constant as defined at a point of time. However, MIDs and other LPSs are constantly evolving. Sforzi and Boix (2019) have showed how, between 1991 and 2011, the number MIDs and other LPSs has changed in number, size and specialization, due to the redefinition of the boundaries of the local labour systems (LLSs) and internal socio-economic changes.

The measurement is made using big data geo-localised by municipality, including 143,229 patent registers (EPO, OEPM, USPTO, etc.), Social Security data (above 8 million registers by municipality, coming from Tesorería General de la Seguridad Social), and research and development (R&D) microdata (a panel of about 8,000 firms plus the

central public sector endowments, coming from SABI and several departments of the Spanish Government) (See Boix, Galletto & Sforzi, 2019). In order to avoid yearly fluctuations and to take into account the lags in the outcome of innovation processes, the common practice is to show data on innovation in periods of four to five years (Griliches, 1992). In this research the data are divided into periods of four years. This will allow proper differentiation of the periods of growth and decline of the Spanish economy.

The data are aggregated by Local Production System (LPS). The LPSs identified for Spain by Sforzi & Boix (2019) for the years 1991, 2001 and 2011, provides a unit of analysis that changes over time and is used in this research. As in Boix, Galletto & Sforzi (2019), the period 1991-2014 is divided in 6 sub-periods of 4 years each.. For each sub-period, we use the LPSs identified by Sforzi & Boix (2019) that are closest to the beginning of the period. According to their productive characteristics, the procedure allows the identification of up to nine categories of LPSs, which, for parsimony, we have aggregated into six homogeneous types of LPS

For the analysis of the evolution of the iMID effect, its causes and the factors that predict it, we use a mix of traditional methods and new machine learning methods. At first, the temporal dynamics of the iMID effect is analysed using descriptive statistics, box plots, density plots, transition arc plots, and GIS maps.

In a second stage, we use a Knowledge Production Function (KPF) to calculate the determinants and predictors of the innovative intensity of the LPSs. The KPF (Griliches, 1979; Pakes & Griliches 1984) relates innovation to R&D inputs. The KPF is modified to incorporate local economic characteristic which are related to idiosyncratic effects associated to each typology of LPSs. Unlike Boix, Galletto & Sforzi (2019), we have space-time dynamic units, which allows us to take into account not only the LPS typology at present, but in previous periods. We use flexible machine learning method - Conditional Regression Trees (CRT) and Random Forest - and a comparison with an estimation using quantile regression with fixed effects.

The results of the descriptive statistics show that the innovative intensity in MIDs has reduced from 2,089 patents per million employees in 1991-1994 to 1,783 in 2011-2014 The iMID effect (difference in innovative intensity of MIDs regarding the national average) is still positive although it has reduced from 29 to 11.

Conditional Regression Trees and Random Forest estimates suggest that the basic factor explaining the differences in innovative intensity between the LPSs is the present and past typology of LPS. Those LPSs that in the previous were MIDs, Manufacturing LPSs of large firm, or Business Services LPSs, show an innovative intensity much higher than the average, and falling between one of these categories in the current period also predicts a better performance. Firm R&D intensity is particularly important by predicting differences in innovative intensity between LPSs that were in one of these three categories



in the previous period but have transformed in Other Services LPSs. Public expenditures in R&D have slow predictive performance, due to its concentration on a few LPSs.

Quantile regression with fixed effects also suggest that the iMID effect maintains during all the period, with an average effect about 27% higher than the national average (with oscillations). The highest differential regarding other types of LPSs come from those LPSs that were MID in past and present period, Manufacturing LPS of large firm that have transformed in MIDs, and MIDs that become Large firm LPSs.

We conclude that, using dynamic units, the iMID effect is positive during all the period 1991-2014 - including two crises - although it has reduced over years. The decreasing seems to be related to endogenous factors. When the innovative intensity is broken down in R&D effect and territorial effect, using a territorial knowledge production function, we find that the part of the iMID effect explained by the territorial component does not decreases for the MIDs as a whole, which is similar to the results that Boix, Galletto & Sforzi (2019) obtained using static units. Since the use of dynamic units allows to break down the effect of the typological transformations, we can now observe that the highest differential regarding other types of LPSs come from those LPSs that were MID during all the period, Manufacturing LPS of large firm that have transformed in MIDs, and MIDs that become Large firm LPSs, although they follow different trends.

These conclusions reveal a complex scenario for top-down innovation policies (national or regional), since suggests different responses from different types of local production systems. The spatial and typological evolution of LPSs in short and medium periods of time (e.g. 10 years) makes difficult to set the target for top-down innovation policy, leading to a discussion about the individualized and flexible responses against more general and stable policies.

Keywords: Marshallian industrial districts; technological innovation; iMID effect; variable-geometry units; change and evolution; big data; machine learning



Searching for rare diamonds? Industrial districts and innovation in Spain and Italy

Francesco Capone. Department of Economics and Management. University of Florence. Italy. francesco.capone@unifi.it

Rafael Boix-Domenech. Departament d'Estructura Econòmica. Facultat d'Economia, Universitat de València. Spain. rafael.boix@uv.es

Vittorio Galletto. Institut d'Estudis Regionals i Metropolitans de Barcelona. Universitat Autònoma de Barcelona, Campus de Bellaterra, Barcelona, Spain. vittorio.galletto@uab.cat

Abstract

Although it has been analyzed over the past 30 years from the theoretical and empirical point of view (e.g. Becattini, 2004; Bellandi, 1992; Russo, 1986; Leoncini & Lotti, 2004; Muscio, 2006; Santarelli, 2004), innovation is perhaps one of the lesser known topics in the Marshallian industrial district (MID) literature. This can be attributed to a certain bias in the conceptualization/literature on the MID, which although it considers that the MID generates knowledge, intrinsically also considers very little of this knowledge comes to be transferred to formal innovation, or that only a few MIDs - rare diamonds - generate formal innovation. In other words, the MID literature has focused mainly on the study of static efficiency without fully considering that, above all else, its main source of competitive advantages is dynamic efficiency.

An exception is the literature on the district effect on innovation or iMID effect (Boix & Galletto, 2009; Boix & Trullén, 2010; Galletto & Boix, 2014; Boix et al., 2018 and 2019). The iMID effect defines the existence of dynamic efficiency in the Marshallian industrial district (MID) in the form of a positive innovative differential compared to the average of the national economy.

The notion of iMID effect appeared as a result of an empirical observation for the Spanish economy (Boix & Galletto 2009): in absolute terms, the industrial districts were the first generator of technological innovation via patents, and their innovative intensity (patents per million employees) was substantially higher than the average of the Spanish economy. This was considered a possible anomaly according to usual innovation theories: since MIDs tend to specialize in mature sectors and small firms - which are not prone to spend on research and development (R&D) - they should not generate such a high amount and intensity of patents. However, they did.

Since its appearance in Boix & Galletto (2009), this line of research has grown based on the empirical observation of the phenomenon itself, although it has also tried to explain from the theoretical point of view why districts innovative.



From the theoretical point of view, the different papers on the iMID effect have explored different complementary ways that could explain their existence: diffuse decentralized creativity (Becattini, 2004, Bellandi, 1992), the Marshallian economies (Dei Ottati, 2006), the knowledge bases and modes of innovation (Asheim & Parrilli, 2012) or local networks (Capone et al., 2018). In the more recent theoretical approach (Boix et al., 2019), the authors propose to understand the MID as a social “innovation machine”, not aimed at satisfying human desires but rather at giving rise to new ones.

From the empirical point of view, the iMID effect continues to exist when alternative indicators are used (Boix & Galletto, 2009), sectoral specialization is controlled (Boix & Trullén, 2010), the value (quality) of patents is taken into account (Galletto & Boix, 2014; Boix et al., 2018), and even when it is analysed over a long period of time (Boix et al., 2019). Compared to other LPSs, MIDs prove to be particularly important even among high innovation quantiles

However, all this line of research has focused on the MIDs of Spain. The next logical step of the investigation should be to test if it also happens in the country where the MID theory was developed: Italy.

We introduce three research questions: does the iMID effect also exist in Italy? Is the intensity of the iMID effect similar in Italy and Spain? And, if the iMID effect is different, what does explain the differences between both countries? Our main hypothesis is that the theoretical determinants of iMID effect in Spain should also be valid in Italy so that the Italian MIDs should also show an innovative intensity higher than the national average. However, due to the specificities of each country, the intensity of the iMID effect may be different in both countries as well as the importance of the particular determinants forecasting the iMID effect in each country.

In order to contrast the hypothesis, the work replicates the framework introduced by Boix & Galletto (2009) and Boix, Galletto & Sforzi (2019) for Italy and Spain simultaneously, covering the period 2001-2015, for which homogenous data for both countries are available.

As in Boix & Galletto (2009) and Boix, Galletto & Sforzi (2019), the basic indicator for technological innovation is the number of patents per million employees. The use of big data allows for the elaboration of the indicator for both countries using patents geocoded by inventor address and date of application. The sources of data are OEPM, PATSTAT, EPO, USPTO for patents; and Censuses (INE) and Ministry of Employment for employees at municipal level. In order to explain the determinants of the iMID effect in each country, we introduce additional information coming from the Census and business registers (SABI, AIDA).



The geocoded data are aggregated by local production system (LPS) using the recent homogenous mapping of the MID in Italy and Spain elaborated by Sforzi & Boix (2019), that covers the years 1991, 2001 and 2011.

The indicators of innovative intensity are elaborated using the aggregated data of MIDs regarding the national average, as well as using the mean and the median. In a second stage, the determinants of the iMID effect in each country are modelled using machine learning methods based on nonparametric regression (Henderson & Parmeter, 2015), Conditional Regression Trees (Hothorn T, Hornik K & Zeileis, 2006, 2019a, 2019b) and Random Forest (Breiman, 2001). The determinants include research and development expenditures per employee, levels of educational attainment, sectoral structure (MIDs specialization), degree of tertiarization, agglomeration economies, internal complexity, and knowledge bases.

The results indicate that, during the period analysed (2001-2015), MIDs show an innovative intensity higher than the national average in Spain and also in Italy. In fact, in Italy the iMID effect is slightly higher than in Spain: 44% and 33% over the average. The analysis of the determinant of the iMID effect also show differences between both countries in causal and predictive frameworks.

The conclusion of the article is that the iMID hypothesis is not a particularity of Spain but rather a general characteristic of MIDs.

The paper is structured as follows. Section 2 introduces the theoretical framework, explaining why and how the MID innovates. Section 3 describes the calculation of the indicator for measuring innovative intensity and the identification of MIDs. Section 4 accounts for the change of the iMID effect in Italy and Spain between 2001 and 2015. Section 5 models the iMID effect using a knowledge production function and machine learning methods. Section 6 draws conclusions.

Keywords: Marshallian industrial districts; technological innovation; iMID effect; geography of innovation; big data; machine learning



Anatomy of a techno-creative community: the role of places and events in the emergence of projection mapping in Nantes

Etienne Capron. University of Angers, GRANEM, France. etienne.capron@univ-angers.fr

Dominique Sagot-Duvauroux University of Angers, GRANEM, France.

Raphaël Suire. University of Nantes, LEMNA, France.

Abstract

As the literature on clusters developed in the early 2000s, cities stepped into these strategies to develop their economies (Gong & Hassink, 2017). In many cases, clusters have been designed with a logic of specialization, particularly around cultural or digital sectors, as it would spur innovation (Lazzeretti et al., 2017). The knowledge used and combined by the actors belongs to distinct bases, reflecting different types of activities (Asheim, 2007; Davids & Frenken, 2018) However, cross-specialization is now seen as an important source of differentiation (Janssen & Frenken, 2019). The idea behind is based on the hypothesis of cross-fertilization between these two fields, whose knowledge would be related and therefore easy to combine, or at least would be complementary (Frenken et al., 2007; Asheim & Hansen, 2009). It would also lead to sustainable differentiation for local economies. Nevertheless, the co-location of these activities does not necessarily imply innovation dynamics at the intersection of synthetic and symbolic knowledge bases – techno-creative innovations. Moreover, it would seem that this type of context favors innovation, but micro-level analyses are lacking to understand the additive effects of co-presence and further explain how do innovations at the intersection of STEM and Arts do emerge (Rodríguez-Pose & Lee, 2020). The aim of this paper is to better understand what roles places and events play in the emergence of an epistemic community dedicated to a techno-creative innovation?

This work is based on the idea that epistemic communities evolve in knowledge domains where they create, share and codify new knowledge (Haas, 1992; Cohendet et al., 2014; Capdevila et al., 2018). Those that evolve in a field of digital technologies produce certain types of knowledge (related to analytical or synthetic basis), and that others evolving in an artistic/cultural field create other knowledge (related to symbolic basis) (Asheim, *op.cit*; Asheim & Hansen, *op.cit*). Therefore, the question of intermediation becomes central to foster collaborations between these actors and innovations at the intersection of these domains. We focus on places and events, whose specific configurations can turn them into meeting spaces where social networks are formed (Cohendet et al., 2010). They also participate in the diffusion of innovations and the configuration of shared visions (Lange et al., 2014). More broadly, they create and/or allow the exchange of social, cognitive, economic and symbolic resources. In the same



vein, certain actors who have the capacity to link two distinct networks (*brokers*) can also be at the heart of intermediation dynamics (Foster & Ocejo, 2013; Sgourev, 2015).

Our empirical approach is based on in-depth case study of projection mapping in Nantes (France), a territory where artistic/cultural activities and digital technologies (mainly software development and IS management) are present. We focused on projection-mapping, which fits to our perspective as it combines an artistic dimension with technological tools. This practice can be defined as the projection of still or moving images on volumes (walls, sculpture, screen...) using videoprojectors and dedicated software. We use semi-directive interviews and network analysis to better understand the foundations of the collective dynamics at the heart of the innovation process.

The results show a fragmentation of the community into three different subgroups. This reveals that the practice seems to be emerging in this territory, and the situation calls for action to bridge the gap between these groups to facilitate collaborations. To be more precise, each subgroup has with a different understanding of projection-mapping and a more or less deep mastery of technological tools. Therefore, a form of ambiguity distinguishes the approaches and participates in their distinction (Sgourev, 2013). Among the places and events identified, some are only frequented by certain actors belonging to the same group. Others are frequented by actors belonging to different groups and can play a catalyst role. More precisely, we have identified different functions according to the type of place or event, which depend on the position of the actors within the network and their activity. Finally, we have identified two actors whose position and activity lead us to believe that they have a broker role. Our paper therefore questions the logic of clustering, and what geographical proximity really brings for innovations between arts and technologies.

Keywords: techno-creative innovation; places; knowledge; network analysis.



Clusters and regional industrial restructuring: Agency and asset modification

Jan Ole Rypestøl. Department of Working Life and Innovation, University of Agder, Grimstad, Norway.

Anna Maria Emelie Langemyr Eriksen. Department of Working Life and Innovation, University of Agder, Grimstad, Norway.

Arne Isaksen. Department of Working Life and Innovation, University of Agder, Grimstad, Norway.

Tatiana Iakovleva. UiS Business School, University of Stavanger, Stavanger, Norway.

Rune Njøs. Mohn Centre for Innovation and Regional Development, Western Norway University of Applied Sciences, Fabrikkgaten, Bergen, Norway

Svein Gunnar Sjøtun. Mohn Centre for Innovation and Regional Development, Western Norway University of Applied Sciences, Fabrikkgaten, Bergen, Norway

Abstract

Theme

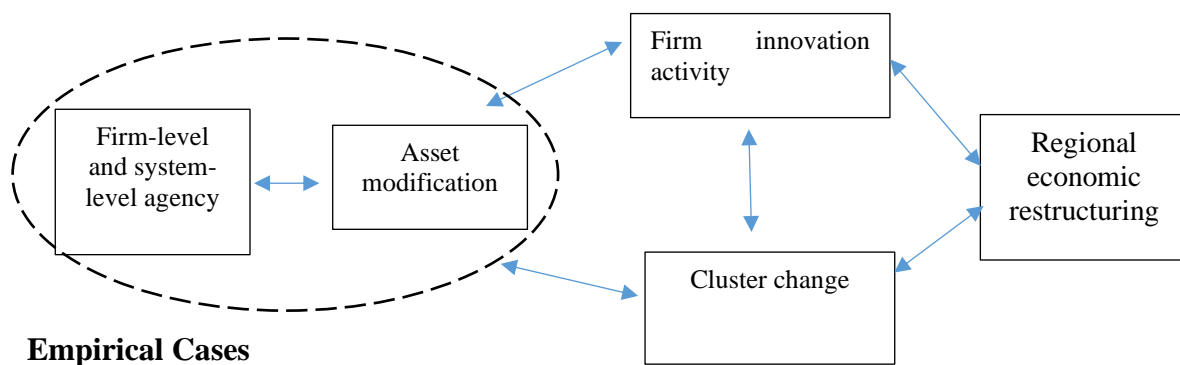
The paper discusses the role of actors and agency for asset modification in firms and systems, and how such modifications affect the restructuring of clusters and regional economies. The paper adopts a broad definition of assets as advised by MacKinnon, Dawley, Pike, and Cumbers (2019), and the paper distinguishes natural, infrastructural and material assets, industrial assets, human assets and institutional assets. Further, the paper argues that assets adhere to both the firm level and the system level and that processes of restructuring require asset modification in firms and systems. Building on Tripl et al. (2020), we categorise processes of asset modification as either asset reuse, asset creation or asset destruction and we stronghold that restructurings benefit from alignment between firm and system-level asset modifications.

Further, the paper argues that asset modification requires agency from firm and system-level actors. Following Isaksen et al. (2018), we argue that restructurings are advanced and intertwined processes that include both firm and system-level agency. The paper understands firm-level agency as being focussed on firm success and profitability, while system-level agency is understood as agency to promote collective value over own success (Asheim, Isaksen, & Tripl, 2019).

Finally, the paper leans towards evolutionary economic geography (EEG) when understanding restructurings as path-dependent processes that can take many forms. In this paper, we follow the classification of outcomes suggested by Grillitsch and Asheim (2018) and separates between the broad categories of path upgrading, path diversification and path emergence. While path upgrading refers to various mechanisms that consequence renewal of existing pathways, both diversification and emergence refer to various mechanisms towards the birth of new industrial paths.

Based on these approaches, the paper develops an analytical framework (Figure 1) that includes how agency performed by various actors, embedded in specific regional contexts, modify assets, and by that contributes to cluster change and regional economic restructuring.

Figure 1: The linkage between agency, asset modification, firm and cluster change, and regional economic restructuring



The theoretical framework is illustrated and advanced by investigations of asset modification processes and the role of agency in three regional clusters in Norway. The cases are ‘policy clusters’ or cluster projects that take part in Innovation Norway’s cluster programme, and which have a restructuring mission. IKuben, centred on the Molde region with about 60,000 inhabitants in Western Norway, is one of the clusters. This is a cross-industry cluster with about 60 member organisations. The cluster aims in particular to support digitalisation and ecological sustainability by its member firms. The second cluster is the Norwegian Smart Care Cluster (NSCC) with around 150 members, located in Western Norway in a region of Stavanger with approximately 200,000 inhabitants. This cluster aims at supporting the development of digital technologies in health and especially welfare sector. The third cluster analysed, is the NCE Maritime CleanTech in the Bergen and Nordre Sunnhordaland region in south-western Norway. This geography consists of close to 400,000 inhabitants, and the cluster includes 116 member firms that aim to promote, develop and implement cleantech solutions in the regional petro-maritime industry.

Based on the theoretical framework in Figure 1, we seek to answer the following questions:

1. Which key types of asset modification underlie cluster development/changes?
2. What type of agency by cluster organisations, firms and other stakeholders has contributed most to the asset modifications?



3. What are the results of asset modifications in terms of cluster change and regional economic restructuring?

Conclusion

The three cases and the following discussion have found that cluster restructurings and regional economic change are intertwined processes that include intense and combined firm- and system-level agencies. In our cases, system-level agencies took the main form of facilitation of ideas or opportunities, while firm-level agency was prone to the exploitation of discoveries. The cases also demonstrated the importance of alignment between facilitation and exploitation as new ideas and opportunities have to be commercialised, and platforms and networks have to be exploited to add value.

The paper also shows that the change of clusters and economies requires asset modification and our finding stronghold that the need for modification goes for both material and immaterial assets. In our cases, the modification of institutions was crucial in the early stage, while the modification of harder assets was most important in the later phase. Examples of such harder assets were the creation of various types of labs that supported regional firms significantly in their innovation processes.

Finally, our paper shows evidence of a correlation between asset modification and regional economic restructuring. The connection indicates that less radical types of asset modification support mainly upgrades. In contrast, we find that more critical types of asset modifications, like creation and destruction, support more radical types of development like path diversification and emergence.

Keywords: industrial policy, Norway, asset modification



Language, culture, and local economic development

Filippo Berti Mecocci. Dept. of Information Engineering, University of Florence

Marco Bellandi. Dept. of Economics and Management, University of Florence

Amir Maghssudipour. Dept. of Economics and Management, University of Florence

Abstract

The cultural context where the individual agents operate, thus the way they diffuse information and knowledge, are critical aspects of the functioning of structures and dynamics of local economic systems (Clark, 2018; Hassink et al., 2019). Particularly, language, as the fundamental communication channel of groups and communities, plays a critical role in explaining such individual behaviors, their mechanisms, and architectures.

In this perspective, the aim of this work is to contribute to the understanding of the role of language in local economic development. Taking a culture-led approach we will cross-reference various streams of literature, within economics, political philosophy, linguistic, communication theories and complex system theory. Specifically, the paper will aim at building a conceptual framework on the dynamics that trigger the generation of individual needs and on the role that acquired linguistic structures have either in codification of pieces of productive and cultural knowledge in communicable information either in spreading it within processes of local economic development.

The framework has four components:

1. Language is an innate cognitive function. We will assume the vision according to which the language influences the way in which it is possible to know the world, and the approach where its development from childhood to adulthood is based on a *parametric function with activation* (Chomsky, 1998; 2002). This means that the principles of grammar would be universal and therefore shared by all the languages of the world. The language individually learned is a specific composition of the generic function that makes up the universal language. The innate aspect is due to the fact that the acquisition of language is a biological component, genetically determined. Depending on the environment to which an individual is subjected, linguistic specificities will be activated to learn the *local or national* language. In other words, individuals would create a “language of the mind” that, in coherence with the language of the environment in which it has developed, determines a system of personal knowledge. This approach is far from the empirical one that explains language acquisition as practice training (Moyal-Sharrock, 2018).

2. Specifically, we will assume a line of research of linguistic communication through face-to-face interactions (Watzlawick, 1971; Storper et al., 2004) and narratives (Shiller, 2017; Sacco, 2020). Face-to-face interactions stress the role of communication by means of meetings and speaking in a group of individual. Narratives are the mental constructions, the stories, that every individual builds for simplifying the complexity that surround her/him.
3. In its turn, culture can be viewed as well in various ways (Throsby, 1995; 1999). We assume a composite approach, according to which local or communitarian culture refers to the set of customs and habits of a certain group of individuals; pure cultural activities as art, cinema, painting, etc. form the so-called cultural production; the above-mentioned cultural components influence each other; and language is the critical relational means that vehicles their interrelations (Santagata, 1998).
4. Finally, the paper adopts the view that language allows articulated individual needs to be structured and this, in turn, affects local cultures of places. In particular, we refer to the “capabilities and functioning approach” (Sen, 2014) aimed at understanding the formation and evolution of such structures (Sacco et al., 2015). The concept of functioning encompasses everything that is desirable because a person gives it value. Capabilities is the set of alternative functionings that an individual, given his or her condition, can achieve. It is plausible to think that this vector of alternative functionings widens according to the stimuli and information that an individual receives (Jackson, 2005). This clarifies the link between knowledge, language, and needs. The framework resulting from the combination of the four approaches will be applied to present general inferences on:
 - a) The relationship between culture and human capital in local economic development (Florida et. al, 2008; Bucci et. al, 2011), which is substantiated in forms of complementary investments;
 - b) Culture as an attractor for tourism (Billie et al., 2006; Bowitz et al., 2009; Frey, 2019) and a mediator of the economic impacts of tourism on local productive systems;
 - c) Culture as a multi-variable source of value creation (Sacco et. Al., 2018), where cultural participation generates social and economic value within places.

Keywords: Culture and language, social interaction, communication, local economic development, industrial district and cluster.



Visualizing Research on Industrial Clusters and Global Value Chains: A Bibliometric Analysis

Thais González-Torres. Department of Business Economics (ADO), Applied Economics II and Fundamentals of Economic Analysis, Rey Juan Carlos University Madrid, España.

José-Luis Rodríguez-Sánchez. Department of Business Economics (ADO), Applied Economics II and Fundamentals of Economic Analysis, Rey Juan Carlos University Madrid, España.

Antonio Montero-Navarro. Department of Business Economics (ADO), Applied Economics II and Fundamentals of Economic Analysis, Rey Juan Carlos University Madrid, España.

Rocío Gallego-Losada. Department of Business Economics (Adm., Dir. and Org.), Applied Economics II and Fundamentals of Economic Analysis, Rey Juan Carlos University Madrid, España.

Abstract

In the current digital era, the borders amongst firms are getting blurred when it comes to value creation. Therefore, the traditional configuration of the value chain is frequently replaced by other ones which include the collaborative participation of different agents. Within this context, global value chains, where the value activities are located in different countries, and industrial clusters, which combine competition and cooperation, are attracting a growing attention of both business leaders and scholars in the recent years. Through a bibliometric analysis, this paper disentangles the intellectual and conceptual structure of the research topic of industrial clusters and global value chains. Results show the multidisciplinary character of the topic, including papers published in different areas, such as business, regional studies and world development, as well as its close link with aspects like innovation, regional development, governance or organization. Finally, this study remarks the research lines that could attract more attention in the immediate future.

Keywords: global value chain¹, industrial cluster², bibliometric study³, co-citation analysis⁴, co-word analysis⁵, Sci-mat⁶, VOS-viewer⁷



Chinese ethnic clusters at the crossroad? the case of the Chinese leather clusters in Florence

Mario Biggeri. *University of Florence Department of Economics and Management*
Huanhuai Zhou *Wenzhouese Economy Research Institute, Zhejiang Province, Zhejiang Province.*

Abstract

The Chinese enterprises are more and more consolidated within the Italian districts (Johanson et al., 2009; Dei Ottati, 2009, 2014; Barberis and Aureli, 2010; Santini et al., 2011; Barberis et al., 2012; Lazzeretti and Capone, 2014) and they are quite often organized in ethnic clusters (Dei Ottati, 2014; Lazzeretti and Capone, 2014; Biggeri, Zhou and Caloffi, 2015).

This paper aims to analyse the role of social capital in these ethnic industrial clusters and at enterprise level from a Sustainable Human Development perspective.

The relevance of social capital in the case of ethnic entrepreneurship and clusters has been analysed by a large body of literature (Portes, 1995; Deakins and Ishaq, 2007; Wang and Altinay, 2010; OECD, 2010). According to this literature, migrants form tight social networks on an ethnic-based social capital, “which is composed of common language, culture, religion, conventions and customs, kinship relationships or personal knowledge, and thus trust and ease of common understanding” (Biggeri, Zhou and Caloffi, 2015). Such ethnic networks are means of social exchanges, channels through which material resources and business information are circulated, facilitating ethnic entrepreneurial activities. Social capital can help identify entrepreneurial opportunities, quickly find funding sources, as well as marketing and technical information, mentoring, trade opportunities, and knowledge (OECD, 2010).

The paper case study is the leather district of small and medium enterprises (SMEs) located in Florence province (Italy), which includes some famous Italian leather fashion companies and their first- and second-tier suppliers. This ethnic cluster is composed by Chinese micro-entrepreneurs and workers originally from Wenzhou, a prefecture-level city localized in South of Zhejiang Province.

Given the complexity of the research, an integrated mixed-methods approach (with both quantitative and qualitative methods) has been adopted. Given the lack of official detailed data, we have performed a number of in-depth interviews to local actors, a number of life-course interviews and collected individual entrepreneurs data through a small-scale survey. Econometric estimates are used to analyse the role of social capital in



the economic performance of the enterprise and in the quality of life of the entrepreneur and his/her family.

The paper is structured into six sections. In the second section, we summarize the literature on ethnic enterprises clusters in Italy and Europe. The third section present the ethnic cluster characteristics based on the literature and the data collected. The fourth section presents the mixed methods methodology used. Section fifth presents empirical analysis results including the econometric estimates. These show that social capital of Chinese entrepreneur is a key determinant for his economic success and quality of life. The results, although expected, are somehow puzzling.

On the one side, they confirm the role of social capital in the first phases of enterprises development having a supportive in entrepreneurial economic success and on the creation of trading opportunities. On the other side, the research results underline the low quality of life and level of exploitation of workers and the self-exploitation of the same entrepreneurs. Section sixth concludes.

This study contributes to the analysis of the processes underlying the determinants of ethnic entrepreneurship and the role of social capital in terms of enterprise economic performance and the entrepreneurs' household quality of life.

Keywords: China, Italy, social capital, ethnic entrepreneurship



Public policies for economic and cultural contribution through clusters and music: Case Bogotá D.C

Marleny Gómez Reyes, Daniel Catalá-Pérez and María de-Miguel-Molina. Universitat Politècnica de València

Abstract

The concept of “creative industries” was used first in 1994, in Australia, when it was launched the report *Creative Nation* (UNESCO, 2013). However, its principal impact was in 1997 when the Department of Culture, Media and Sports, created the Working Group of Creative Industries in the United Kingdom (UNCTAD, 2010). Since then, they have been very active to spread out the idea of cultural and creative industries (CCI) in the European Union. According to United Nations, CCI are those that “*create, produce and deliver products and services using intellectual capital as their main income*” (UNCTAD, 2008) and they have of great importance for the regional economic development, especially in developing countries (UNESCO Forum of Ministers of Culture, 2019).

On the other side, the “cluster” concept is a classical one in the literature (Cooke, Martin & Asheim, 2006). Its core argument is that similar businesses in competition, can be more effective where they are located in the same district in order to share capabilities and ideas, allowing a mutual inspiration (Islam, 2000). And, regarding cultural industry, clusters have been especially attractive (UNESCO, 2019). To concentrate CCI in clusters (Baculáková, 2018) can enhance their intellectual capital because the core of their knowledge is based on a collective learning (Bialic-Davendra et al, 2016; UNCTAD, 2008). Moreover, CCI clusters can give support to the SMEs (Zheng & Chan, 2014), which are the typical businesses in this sector.

The literature analyzing the spatial concentration of CCI is quite extensive. CCI tend to concentrate in geographical spaces, such as big cities (Boix, Lazeretti, Hervàs, & De Miguel, 2011), that have the characteristics of a metropolitan area where there is more concentration in their local manufacturing system and impact on their economic activity. Bogotá, the capital city of Colombia, could be an example of these geographical spaces.

But, due to the different kinds of agglomerations that cities can present, CCI in Bogotá could be analyzed from three approaches: pure agglomeration (geographical proximity), complex industry (minimize transactional costs) and/or social network (high levels of social integration). However, we focus only on a pure agglomeration analysis to evaluate the concentration of “hot points” in a city, in line to what Boix et al (2011) did for 16 European cities. In that study, the authors established four categories of clusters:



(i) low urbanization economies, which are formed in isolation and are usually specialized companies; (ii) high levels of polycentrism, with the formation of groups with similar specializations that facilitate synergies; (iii) low levels of polycentrism and high urbanization, centered on a single point of the city due to an urban structure that does not allow expansion and that benefit from complementarities; (iv) and multicentrism, which occurs in large cities when there is speculation of the rents that causes a rise in rents, making it difficult to concentrate at one point; this setting fosters creative environments (p.757).

In our study, we are approaching the analysis of CCI clusters from the point of view of their promotion through public policies. The role of public policies is crucial for CCI because they allow to develop strategies and tools that improve their growth and reduce economic problems (Bardach, 1998, UNESCO, 2019). CCI can improve, not only economy, but also culture, education, social wealth, and so on (Organisation for Economic Co-operation and Development, 2005). For this reason, UNESCO (2019) elaborated a report regarding the sustainable development of countries by means of cultural policies, based on the sustainable development goals (SDG).

The process of creation of public policies has different steps: to identify and define the problem, to obtain information, to develop different alternatives, to select the criteria to implement them and to evaluate their results (Bardach, 1998). In the case of the CCI policies, different international organizations and institutions agree that this public intervention can focus on eight main areas: institutions and regulation frameworks (to promote favorable conditions), information and knowledge (for continuous communication), human resources and learning (development tools), infrastructure (spaces for CCI), financing (direct, indirect and self-sustainable), markets and population (satisfy demand necessities with a good offer), cooperation (networks) and creativity and innovation (depending on the social and political context) (Organización de Estados Iberoamericanos, 2016). Of these, in the area of cooperation and integration, the promotion and strengthening of the dynamics of collaboration in the creative sector, goes through the impulse of creative districts (p. 159). But cooperation needs to go hand in hand with government measures to find sustainable financing and communication strategies to develop and promote innovation, training and a constant update of the CCI actors (p. 167).

Any policy regarding culture and creativity needs to integrate some economic goals such as equity, efficiency, a positive trade balance, economic development and full employment, to impact in the welfare of consumers and CCI services. But to obtain the necessary balance among offer and demand, it is necessary a sufficient production of quality, enhancing creative processes. Moreover, it is necessary to guarantee a consumption culture of CCI at national and international level, as well as scenarios to reinforce diversity, design, own brand and connectivity (Organización de Estados Iberoamericanos, 2016).



Moreover, to let clusters to dynamize a sector, such as music sector, it is necessary a governance model to generate success and a sustainable competitiveness (Cooke & Lazzeretti, 2008). For example, during the 1970s recession, the governments of US and the West European countries developed strategies to regenerate their urban centers by means of public policies to increase cultural and creative consumption (Binns, 2005).

Some Latin American metropolises have developed different governance strategies: transform old industrial areas to create creative districts, engage the private sector, promote substantive innovation, boost networking within the framework of governance, bring economic incentives and tax benefits for companies that are located in the creative districts that want to boost (Navarrete Ulloa, 2018). In addition, CCI policies, as occurs for example in Brazil, intend to mitigate the problems of segregation, violence, racism and gender issues (Navarrete Ulloa, 2018, p. 41).

But in any case, part of the failures in the implementation of these policies in Latin America has been due to the unfulfilled promises, the inconstant networks, the lack of effectiveness of the projects, the lack of information, lack of resilience, limitations in political collaboration, little integration of the actors, absence of actors' involvement in the development of policies and public debates (Navarrete Ulloa, 2018).

Bogotá concentrates 8 million inhabitants and it is structured in 20 districts (Alcaldía Mayor de Bogotá, 2020). We will review, by one hand, that the promotion of creative clusters, identified as Orange Development Areas (ADN, from their Spanish name) by the local government, is recognized as one of the main objectives of the Public Policy of Cultural and Creative Economy 2019-2038, and, by the other hand, that the music sector is promoted through the National Music Plan for Coexistence (PNMC, from its Spanish name). But there is a lack of studies regarding how these policies have changed the mapping of the CCIs of Bogotá in the last years and how this situation can help music sector to improve.

Keywords: cluster, cultural and creative industry, music sector, public policies, Colombia.



Rise and fall of the Sinos Valley footwear cluster: a tale of a supercluster

Alessandra Roehrig. Pesquisadora do Grupo de Pesquisa em Dinâmica Econômica da Inovação (GDIN) do Programa de Pós-Graduação em Economia (PPGE) da Universidade do Vale do Rio dos Sinos (UNISINOS). aleroehrig@gmail.com

Janaína Ruffoni. Coordenadora do Grupo de Pesquisa em Dinâmica Econômica da Inovação (GDIN) / Professora do Programa de Pós-Graduação em Economia (PPGE) da Universidade do Vale do Rio dos Sinos (UNISINOS). jruffoni@unisinis.br

Renato Garcia. Professor Associado do Instituto de Economia da Unicamp. rcgarcia@unicamp.br

Abstract

Introduction

The notion of industrial clusters has been widely used in economic geography and in innovation studies. Recently, clusters have become a crucial component of regional development and innovation strategies in many countries, with strong effects on the competitiveness of small and medium enterprises (de Miguel Molina et al., 2019; Trippel et al., 2015). In fact, literature on the dynamics of industrial clusters has increasingly focused on the analysis of the main factors that influence the evolution of the cluster. Some studies have focused on the finding of empirical evidence on how industrial clusters emerge and grow over time (Audretsch & Feldman, 1996; Belussi & Sedita, 2009; Garcia & Scur, 2016), what makes them decline (Østergaard & Park, 2015), as well as they renew (Hervas-Oliver & Albors-Garrigos, 2014; Vale & Caldeira, 2007). In general, the literature has increasingly recognising that the existence and the structure of industrial clusters can only be understood through the analysis of their evolution over time (Belussi & Hervás-Oliver, 2016; Martin & Sunley, 2011; Menzel & Fornahl, 2009).

Industrial clusters are often defined as geographic concentrations of interconnected firms, which involves small and medium enterprises, specialized suppliers, service providers, and related industries, with local institutions on research and training of workforce (Porter, 1998). The adaptive capabilities and the evolution of industrial clusters need to be deeply analysed, considering the developments in industry, technology, and institution and the heterogeneity in actions (Østergaard & Park, 2015). In fact, there has been a growing perception of the necessity to further develop the understanding on the dynamic perspectives on clusters, in order to gain better insights into potential forms of their long-term evolution (Menzel & Fornahl, 2009; Trippel et al., 2015).

In this paper, we aim to analyse the recent evolution of the footwear industrial cluster of the Sinos Valley, considering the huge changes that local producers have



undergone in a long-term perspective. The Sinos Valley footwear cluster is still the main Brazilian producer of footwear, with a production of around 10% of the Brazilian footwear production, employing almost 30,000 workers in footwear manufacturing activities, to which are added others in related industries. In the mid-1990s, the Sinos Valley was recognised as a footwear supercluster, since it had an impressive concentration of local firms, which includes over than 400 footwear producers, most of them specializing in women's shoes. Around these footwear producers, there is a range of other firms which manufactures inputs for the industry, markets its output or renders special services (Schmitz, 1995). However, recently, Sinos Valley lost its dynamism, which resulted in large losses of its productive and entrepreneurial skills, with an important reduction of local employment and, therefore, with deleterious effects on regional development. Based in this context, this paper seeks to analyse this process of loss of dynamism in the Sinos Valley supercluster.

Brief theoretical remarks

There are different approaches that presents the main characteristics of the different stages of the cluster life cycle. Despite they slightly vary according to each author and approach, all of them agree that there are distinct 'emergence', 'growth', 'maturity' and 'decline' phases; and that there are many ways to renew the cluster evolution (Garcia & Scur, 2016; Hervás-Oliver & Albors-Garrigos, 2014).

Recent research analysis of industrial clusters and regional innovation systems has shown that the evolution of region's capabilities is tied into a path-dependence process (Martin & Sunley, 2006), in which the capabilities of local firms can evolve over time and affect the cluster evolution. In general, the evolution of industrial clusters is related to the evolution of the internal capabilities of local firms and the way they accumulate new knowledge (Garcia & Scur, 2016). The emergence and the growth of industrial clusters is related to the creation and accumulation of new capabilities among local players, especially among firms and local institutions. Yet the lack of capabilities among local firms to overcome technological and market disruptions is the key issue to explain the cluster decline (Østergaard & Park, 2015). In fact, there are several theoretical approaches that conceptualise why some clusters decline and disappear. The starting point is often an exogenous changes in the industries, key technologies and the market (Isaksen, 2018; Østergaard & Park, 2015).

One approach to analyse why some clusters are incapable to face changes in technologies and markets is to combine the meso-perspective directing on lock-in processes at the cluster and regional innovation system level, and a micro-perspective focusing on lock-in processes at the firm level (Giuliani, 2005; Isaksen, 2018). The meso-perspective to cluster decline concentrates on the lock-in of cluster development and the related system failure approach, including the obstacles found in too-strong bonding social capital. The micro-perspective deals with lock-in processes related to conventions



in the form of shared norms among local producers and among other cluster institutions about how production should take place, which may not fit changes from external conditions. The micro-perspective also includes the analyses of how local firms' activities as knowledge creation and innovation activity take place, which also do not have to be adapted to changing external circumstances (Isaksen, 2018).

Therefore, to understand cluster decline, it is necessary to look at the cluster's adaptive capabilities in relation to external shocks, such as economic recessions, environmental disasters, market disruptions and technological disruptions. Technological disruptions in particular change the underlying knowledge base for an industry and can easily lead to decline if the cluster firms are not able to move into the new technology (Østergaard & Park, 2015). The disruptions could also be linked to changes in the industry life cycle during an industry restructuring. During the restructuring phase, exogenous innovations can create less space for new firms and increase the exit of technology laggard firms, which change the industry structure and leave room for fewer clusters.

Basic methodological aspects

Our purpose is to explore a different angle of cluster evolution. For this reason, our approach is qualitative and based on the case of the Sinos Valley supercluster. Our study is longitudinal, as it comprises the sourcing of 30 years of secondary data. The capturing of the dynamics of the Sinos Valley has required the acquisition of information going back to the 1990s about how the cluster evolved through different life-cycle stages. Our focus is on understanding the role of the local capabilities and knowledge creation throughout a cluster's life cycle.

Preliminary results

Our main results show that the Sinos Valley footwear cluster underwent to huge structural change in the last two decades. In general, main indicators show the huge decrease of the production and employment in the whole footwear local chain. We can also assure that the status of supercluster have been lost in this period (Schmitz, 1995). The structural transformation process of the gaúcha footwear industry, from 1995 to 2017, is characterized by the shrinking of footwear production, reflected in the level of employment and the huge decrease of local producers. Much of this loss is related to the drop in footwear exports, specially of female leather footwear, and mainly to the largest destination of the Brazilian footwear exports, the United States.

Only between 2005 and 2017, footwear production decreased by 37% in value and 5.4% in volume of pairs. In contrast to other Brazilian footwear producing regions, Sinos Valley performance was inferior to the country's average, and the physical production, measure by the number of pairs is lower than the beginning of the 2000s. Findings also show changes in the profile of local production, with a significant increased of the



manufacturing of non-leather footwear. Brazilian exports in general also change, by the huge decrease of the share of leather shoes, and the growth of synthetic and textile footwear. Results also show the increase of the SME's share in local productive structure, not only in manufacturing, but also in employment.

Therefore, an evident loss of dynamism in the Sinos Valley footwear cluster can be noted. This allows us to characterize the declining phase of the life cycle of the cluster, due mainly to the difficulties related to the accumulation of new technical and technological capabilities. In fact, local producers were locked in a form of development that was quite effective over a long period of time. This form of development involved important increases in technical and manufacturing capabilities, but without the incorporation of new technological capabilities and product development. Moreover, they were trapped in a way of commercializing their products that was highly dependent of the procurement from major global buyers. However, the changes in the international footwear market that have been underway since the mid-2000s have been marked by the growth of China and other Asian countries as the main global suppliers of these products. The rapid growth of these countries meant that local producers were unable to convert the skills they had accumulated throughout their trajectory into new products and process improvements, in order to sustain their insertion in the new competitive scenario of the global footwear value chain.

Keywords: footwear, Sinos Valley, Brasil



Enhancing Competitiveness of Cluster Firms: The Role of Cluster Social Capital and Firms' Involvement in Cluster Activities

Aitziber Elola. Orkestra – Basque Institute of Competitiveness and Deusto Business School, University of Deusto. aelola@orquestra.deusto.es

James R. Wilson. Orkestra – Basque Institute of Competitiveness and Deusto Business School, University of Deusto. jwilson@orquestra.deusto.es

Abstract

Economic activity is geographically concentrated in clusters of companies and other agents related to their activities (research centres, specialized training centres, government agencies, etc.). Policies aimed at strengthening the competitiveness of these clusters are an important element of the competitiveness policies of many countries and regions. These policies are often based on supporting intermediary institutions that boost collaboration in clusters as a complement to competition.

The Basque Country (Spain) was, together with Catalonia and Scotland, one of the pioneering regions in the implementation of a competitiveness policy based on clusters. Although some changes have been made to this policy since its inception in the early 1990s to adapt it to the reality of clusters, cluster policy is still one of the basic pillars of the competitiveness policy of the Basque Government. In all these years, cluster policy of the Basque Country has been implemented through the creation or support of some form of institution for collaboration or cluster organization (CO). These institutions have also evolved in their organization and in their operation and at the time of this study, 17 cluster organizations were beneficiaries of the Basque Government's cluster program.

As in the rest of public policies, in order to optimize the use of limited public resources, in the case of cluster policy there is also a general interest in developing and applying evaluation methods, in order to learn and adapt the policy to the new challenges and challenges identified from those assessments. Despite this interest and this need, both from the point of view of academic research and from the point of view of practice, the evaluation of cluster policy presents important challenges when it comes to measuring and explaining the impacts of these policies on competitiveness. These challenges include both methodological difficulties in measuring the intangible impacts of fostering collaboration, the wide variety of policies employed and the lack of relevant data (Aranguren et al., 2014; Maffioli et al, 2016; Schmiedeberg, 2010, Smith et al., 2020; Wilson, 2019). Ultimately, the challenges in their evaluation can even lead to questioning the cluster policies for not being able to effectively demonstrate their impacts.



In order to evaluate the efficiency in the implementation and development of cluster policies, one of the aspects to be analysed is the activity of the cluster organizations and, where appropriate, demonstrate that this is related to greater economic development. In an attempt to continue advancing in the research and practice of the evaluation of the cluster policy, Orkestra – Basque Institute of Competitiveness (Deusto Foundation) and SPRI (Basque Government) have been collaborating in the experimentation with different methodologies and techniques, also supported by the dynamics of the working group on evaluation of TCI Network clusters. One of these methodologies has been the elaboration of a questionnaire called “The Voice of the User”, with the specific objective of better understanding how the activities of the COs are perceived by users (i.e. cluster members) and the impact of those activities on the competitiveness of companies. The questionnaire was divided into five sections in which information on different aspects was collected: (1) firm/organization characteristics; (2) (degree of) involvement of the company in the activities of the CO; (3) areas of cluster cooperation activities; (4) perceived impact of cluster cooperation on firm competitiveness; (5) perceptions about collaboration in the cluster. 597 responses from companies in the 17 COs were obtained, for a 33% response rate.

Based on the data gathered during this learning-oriented evaluation process, the aim of this paper is to better understand the impact of COs’ activities on cluster firms’ competitiveness. More specifically, we analyse the relationship between cluster social capital, firms’ involvement in cluster activities, and perceptions of the impact of COs’ activities in firm competitiveness.

Although literature on cluster facilitators is limited, there is some consensus on the role of these actors on building trust and social capital within the cluster. Based on literature review, Ingstrup & Damgaard (2013) define cluster facilitators as ‘individuals or a team of individuals who are seated in a formal cluster secretariat within a cluster, facilitating and coordinating cluster development through trust building in order to promote cooperation and sharing of activities and resources among the participating actors of the cluster’. Thus, trust and alignment may be important prerequisites (and outcomes) to build a platform for collective and collaborative action (Ingstrup, 2013).

Regarding the effects of social capital, literature on organizational behaviour establishes a positive relationship between trust, organizational commitment, and organizational outcomes, among others (e.g. Aryee, Budhwar & Chen, 2002; Dirks & Ferrin, 2002; Korsgaard, Brodt & Whitener, 2002; Mayer & Gavin, 2005; Mayer, Davis & Schoorman, 1995). Similarly, Leana and Van Buren (1999) also found a significant relationship between organizational social capital and both individual and collective outcomes within organizations. In parallel, some recent research on cluster organizations examines the relationship between collaboration initiatives of COs and improved innovation and financial performance among cluster firms (Morgulis-Yakushev and Sölvell, 2016). More explicitly, Morgulis-Yakushev and Sölvell (2016) establish a



they may guide the management of both the entire cluster policy and the implementation of that policy in different COs, and directly influence the initiatives launched by the COs and the Basque Government in future editions of the Cluster Program.

Keywords: competitiveness, social capital, cluster organization.



Environmental Innovation across SMEs and large firms in Europe: The importance of STI and DUI drivers

M. Davide Parrilli, Bournemouth University & Merima Balavac, Sarajevo University & Dragana Radicic, Lincoln University

Abstract

With this paper we focus on the relation between business innovation modes and environmental benefits. Over the years firms have recognized the importance of prioritizing innovation as a means to gain competitive advantages in the open market. Yet, in more recent times innovation needs to be guided as there are new boundaries and requirements for the business system as a whole and to individual businesses, especially in advanced economies. One of these boundaries is nature and the related environmental protection that is in the priority agenda of all countries after the Paris Agreement 2016. As firms can adopt different strategies of innovation, some more science-driven and others more practice-driven, we want to investigate which ones are more responsible towards eco-innovation requirements and which ones benefit most within the firms and disseminate positive impact among users. This analysis is seen also in relation to the size of the firms as SMEs typically rely most on practice and interactive-based innovation activities. This may help design environment protection orientated policies that focus on specific drivers, thus making policy action more efficient and effective.

Keywords: Innovation modes, SMEs, Eco-innovation, Environmental benefits, Europe.



The R&D ‘fetish’ and the drivers of SME innovation in the regions of EU

Jose-Luis Hervas-Oliver, UPV, Spain. jose.hervas@omp.upv.es

Davide Parrilli, Bournemouth University (UK)

Andrés Rodríguez-Pose, LSE (UK)

Francisca Sempere-Ripoll, UPV, Spain

Abstract

European Union (EU) innovation policies have for long been mostly research driven. The main goal has been to raise R&D to achieve a rate of R&D investment or 3% of GDP. This study argues that such a research-based approach may not deliver the best innovation policy. SME innovation relies on a number of internal sources, both R&D and non-R&D based, and external drivers such as collaboration with other firms and research centres, and non-R&D inputs. We posit that regional specificities can play a greater role in determining SME innovation. Using data from the Regional Innovation Scoreboard (RIS), covering 220 regions across 22 EU countries, we find that regions in Europe differ significantly in terms of SME innovation depending on their location. SMEs in more innovative regions benefit to a far larger extent from a combination of internal R&D, external collaboration and non-R&D inputs. SMEs in less innovative regions rely fundamentally on external sources, and particularly on collaboration with other firms. Greater investment in public R&D does not always lead to improvements in regional SME innovation, regardless of context. Hence, a more place-sensitive policy is required in order to maximise SME innovation across the varied EU regional contexts.

Keywords: Innovation, SMEs, R&D, collaboration, regions, EU



SME modes of innovation embedded in innovation systems: technological innovations, STI and DUI drivers in Europe.

Jose-Luis Hervas-Oliver, UPV, Spain. jose.hervas@omp.upv.es

Davide Parrilli, Bournemouth University (UK)

Francisca Sempere-Ripoll, UPV, Spain

Abstract

At the intersection of SME innovation and innovation systems, this study investigates on the differences between SMEs modes of innovation in advanced and catching-up countries (Southern and Central and Eastern European) in Europe. Distinguishing between STI (internal and external or collaboration *Science, Technology and Innovation*) and DUI (collaboration *Doing, Using and Interacting*) drivers. Utilizing 29,834 SMEs in 15 countries from the Community Innovation Survey (CIS) 2014, results show SME innovation heterogeneity across different innovation systems where SMEs are embedded. The different forms of knowledge and learning or modes of innovation across innovation systems are dependent on the technological innovation strategy pursue (either product or process) by SMEs. Each technological innovation and innovation system account for different returns from the implementation of STI and DUI drivers.

Keywords: Innovation, SMEs, innovation systems, CIS data



Smart Specialization in a mature industrial district : understanding change, complexity and diversification through patent analysis

Jose-Luis Hervas-Oliver, UPV, Spain. jose.hervas@omp.upv.es

Carles Boronat-Moll, UPV, Spain

Francisca Sempere, UPV, Spain

Jose Mariano Dahoui, UPV, Spain

Pedro Caja, UCH, Spain

Abstract

This study deciphers the evolution of the Toy Valley cluster in Alicante, analyzing its continuous transformation and diversification through an analysis of patents over the last 100 years. A process of smart specialization is presented, showing the openness of the system and the continuous knowledge recombination, complexity and diversification of a traditional industrial district.

Keywords: Smart specialization, openness, diversification, industrial districts



Designing innovation policies around Industry 4.0: the case of the Valencian Region in Spain

Jose-Luis Hervas-Oliver, Universitat Politècnica de València, Spain

Cesar Taboas, Universitat Politècnica de València, Spain

Sofia Estelles-Miguel, Universitat Politècnica de València, Spain. soesmi@omp.upv.es

Abstract

The study analyses the implementation of open innovation practices to facilitate Industry 4.0 in a region. Through technology transfer organizations (TTOs), a regional innovation policy promotes STI (*Science, technology and innovation*) activities to learn and then, DUI (doing, using and interacting) activities, to build up capabilities around Industry 4.0. The focal unit of analysis is a group of regionally-focused TTOs learning about Industry 4.0 in their respective focal industries and the subsequent implementation projects to transfer knowledge to the local SMEs. Implications for policymakers in regions for Industry 4.0 are presented.

Keywords: Technology transfer organization, Industry 4.0, open innovation.



Creativity as transversal power for cooperation and innovation: the potential of CCI in rural areas and the impact of new technologies on subsectors of CCI South Tyrol (Italy)

Eleonora Psenner, Eurac Research. Bolzano, Italy.

Abstract

This contribution offers insight into how CCI professionals and stakeholders in South Tyrol (Italy) perceived the development of CCI just before the event of COVID-19. It refers to the diversity, richness and at the same time (inherent) fragmentation among CCI subsectors in the territory by analyzing existing cooperation and synergistic opportunities to foster cross-sectorial innovation and spill-over effects. Challenges and potentials perceived by professional of CCI are described through qualitative data and raise awareness of how CCI could play an active role in the future regional development of South Tyrol, especially given the need to keep an open (creative) mind and to think of multiple future scenarios as the event of COVID-19 has been teaching us recently. This contribution wants to put a special focus on the impact of new technologies on single subsectors of CCI in South Tyrol in a time in which external circumstances are affecting the global market while challenging professionals to be flexible and adaptive at the same time. More than ever professionals are confronted with the increasing importance of digitization and new technologies. This paper points out the urge to find a common approach and farsighted perspective to leverage current attempts of different local stakeholders, institutions and networks to identify and promote sustainable solutions for the territory's unfolding through creativity and innovation. As a starting point it provides the sector's assets existing prior to COVID-19 which could become key for future strategic developments.

Throughout Europe there is the urge to give visibility to culture and arts in non-urban areas, redefine their role, highlight ways to support them, and give a new understanding of rurality and non-urban culture (EU Policy Paper "Beyond the Urban", 16.03.2020; Policy Paper of EuregioLab Tyrol – South Tyrol – Trentino 2020). Besides the fragmentation of Creative and Cultural Industries (CCI), that create some difficulties to perceive and manage them as a congruent sector per se, professionals working in CCI claim that the main challenge consists in the lack of visibility and of suitable funding schemes. The present analysis gives insights to the CCI development in the Alpine region South Tyrol (Italy). The region offers a multi-faceted case study representing a predominantly rural context in which, traditionally, agriculture and tourism result being the main priority on the political agenda. This contribution takes the outcomes of the participative project commissioned by IDM South Tyrol and carried out by Eurac Research and the Free University of Bolzano between 2018 e 2019 as a starting point. The study offers a set of qualitative data from 12 roundtable discussions performed with



The Value of the Contractual Collaboration with University in Firm's Innovation Outputs: Evidence from China

Yitian Lu, Bournemouth University, ylu@bournemouth.ac.uk

Davide Parrilli, Bournemouth University, dparrilli@bournemouth.ac.uk

Gelareh Roushan, Bournemouth University, groushan@bournemouth.ac.uk

Abstract

Despite its importance in a firm's innovation activities, the collaboration with universities is not an easy task. In theory, previous literature has raised at least two issues. First, the role of universities in supporting the firms' innovation activities has been questioned, as it was found that the university-industry collaboration (UIC) should be combined with other types of collaboration (e.g. supplier, customer, competitor) for technological innovation (Gonzalez-Pernia et al. 2015). Second, as indicated by Pippel (2014), studies on the impacts of R&D collaboration are largely focused on technological innovation, whereas insights on how non-technological innovation can benefit from collaboration are scarce.

In practice, the process of the collaboration is often associated with high costs and risks, which may impede engagement for small and medium-sized enterprises (SME) in the UIC. This is especially the case in emerging economies where SMEs are mostly downstream of the industrial chain, and are not capable of making heavy investments in R&D collaboration with universities (Handoko et al. 2014). Also, due to the information asymmetry, business managers may find it difficult to choose the most appropriate university to collaborate with for innovation. As such, it is relevant to investigate the role of proximity, as well as the role that university research quality has played in the collaboration.

To fill the research gaps, this paper has focused on three research questions: 1) whether, and how, firms' technological innovation (new/improved product/process) can benefit from the contractual collaboration, which involves UIC channels that are associated with higher transaction costs and bonded by a formal agreement; 2) what is the impact of collaboration on firm's management innovation (new/improved organisational structure and marketing strategy); and 3) whether proximity and research quality moderate the relationship between contractual collaboration and innovation outputs. By investigating these three questions, the purpose of this research is to explore the impacts of formal R&D collaboration on firm's innovation outputs, thereby helping firms to choose the most appropriate university for their innovation collaboration.



The data employed in this research was gathered through a survey to Chinese manufacturing firms that were randomly selected from seven provinces/metropolitan regions. The questionnaire was echoing the 2016 Community Innovation Survey of Eurostat and the 2019 National Enterprise Innovation Survey of the Chinese National Bureau of Statistics. After two rounds of the data collection (pilot and formal survey), 395 useable samples were collected. Structural equation modelling (SEM) was used for the empirical analysis.

This paper contributes to the current literature in the following ways. First, we confirmed the positive relationship between formal R&D collaboration and technological innovation. Despite the recent doubts on the role of the university in supporting a firm's innovation (Gonzalez-Pernia et al. 2015), this paper suggests that formal R&D collaboration is still an important source in a firm's technological progress, as it enables firms to exploit the ready to use knowledge that is already held by universities, and, in addition, to explore new knowledge with universities for their new product/process development.

Second, apart from the technological innovation, this paper reveals that a firm's management innovation can occur as a direct outcome of the UIC, as well as it being the result of the technological innovation that comes from university knowledge. For example, in collaboration with Cranfield University, the UK automobile manufacturer Jaguar Land Rover has successfully developed three types of hybrid electric vehicle, which are now leading a shift in the company's marketing strategy, enabling them to build an environmentally friendly public image. In this regard, technological innovation positively mediates the relationship between collaboration and management innovation. This finding contributes to the scarce literature on the impact of R&D collaboration on management innovation, suggesting that, when it is compared with other partners, collaborating with universities may bring more holistic and profound changes into organisations, since it affects both technological and management innovations.

Third, interestingly, we found that neither proximity nor research quality moderate the relationship between contractual collaboration and innovation outputs. For proximity, although the geographical distance is important in knowledge exchange activities, a permanent co-location may not always be necessary due to the rapid development of communication technology. Temporary proximity, defined as the short or medium-term visits, could be sufficient for an effective knowledge exchange (Torre 2008). For the research quality, we argue that knowledge from regional universities can also be an important source of the technological advances of firms. Although regional universities may not always be able to conduct cutting-edge scientific research, most of these universities are applied-science oriented, making them valuable partners for the firms that are seeking incremental improvements in their current product and manufacturing process.



In conclusion, whilst collaboration with universities may be expensive and risky to firms, it is still of great value, as it helps firms introduce both technological and management innovation. For business managers, although proximity is important, a permanent co-location with universities may not be necessary for better collaboration outcomes. We also highlighted the role of regional universities in supporting firms' technological innovation, and policy makers should be informed of the importance of such universities in constructing the regional innovation system.

Keywords: China, Innovation output, university collaboration



Footwear industrial districts in Alicante: a detailed analysis

Enrique Claver-Cortés; Universidad de Alicante; enrique.claver@ua.es
Javier Martínez Falcó; Universidad de Alicante; jmf51@alu.ua.es

Abstract

Introduction

The footwear sector is integrated of a whole series of industrial and manufacturing activities that aim to transform, sequentially, a series of raw materials to obtain a final product, shoes, to be marketed at different points of sale.

The production of the sector in 2018, according to the latest data from FICE, was 99 million pairs, with a total of € 2.1 billion. The sector has a marked export character, something that is reflected in its export volume, which in 2014 represented a total of 158 thousand pairs, reflecting a growth of 3.2% over the previous year.

Most of the companies that integrate this sector are SMEs (52.09%) and microenterprises (47.85%), so we consider that the footwear sector is highly fragmented. In addition, its geographical location is usually concentrated in certain autonomous communities, among which the Valencian Community stands out, specifically in the province of Alicante (66.53%), Castilla La Mancha (9.41%) or La Rioja (9.13%), among other.

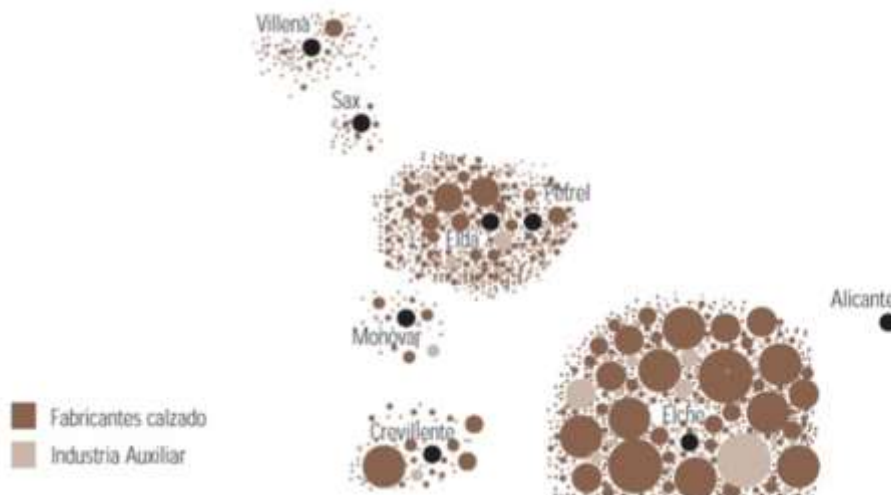
The present investigation tries to analyze the industrial districts of footwear from Alicante, reason why the province of Alicante is the unit of analysis of the investigation. The decision to study the province of Alicante has not been a random one, since it is there where there is a large spatial concentration in a few regions of that province: Baix Vinalopó, Vinalopó Mitjà and Alto Vinalopó. In addition, there is a distribution of specialties in the aforementioned regions (Sebastiá, 1997).

In this way, the tradition of footwear in hemp and esparto grass influences the fact that footwear made with a large amount of rubber and plastic is located in Elche and its region. On the other hand, the Elda area has specialized in women's footwear and the Villena area, based on experience working with leather, in children's footwear. The reasons for this location have been attributed, above all, to the presence of specialized labour, to the tradition that links with the local existence of a raw material (for example esparto grass), to the knowledge of the market, and to the ease of access for information on new raw materials, machines, customers, etc.

Figure 1. Map of the industrial districts of footwear in Spain. Source: Rubio (2015)



Figure 2. Map of industrial districts of footwear in the province of Alicante. Source: Cervera (2003).



Numerous previous works have put their interest in identifying the footwear industrial districts in the territory (Boix and Galleto, 2006). Although the data used for identification corresponds to 2001. In the present investigation, the aim is to establish



whether the industrial districts of the province of Alicante continue to be in force today, or whether, on the contrary, after almost two decades, the main activity carried out up to that moment in these business concentrations has lost relevance in favour other types of activities. For this reason, we set ourselves the first specific objective (SO.1)

SO.1 Identification of the industrial districts of footwear in the province of Alicante from employment data corresponding to the year 2019.

Likewise, one of the constituent elements of the industrial district is the existence of local and regional institutions that offer information and support services to the district's business. Therefore, these institutions, both public and private, provide specialized technical information and support, such as research centres, standardization institutes, universities, training centres, employer associations, government institutions or financial entities (Guerras y Navas, 2015). The importance of support institutions for the footwear industry has been studied, but the study of how the institutions are distributed in the territory and, therefore, if they are located close to the industrial districts, has not been studied in depth. For this reason, the second specific objective has been established (S.E.2).

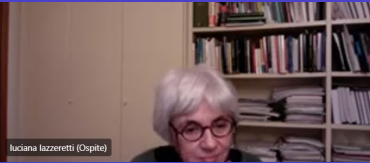
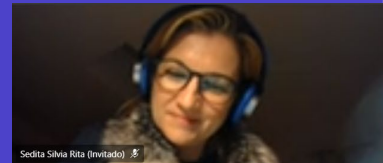
SO.2 Identification of institutions which give support to footwear industry, with data corresponding to the year 2019, as well as testing whether there is a spatial relationship between the institutions and industrial districts of Alicante footwear.

This research, in addition, aims to address the internationalization process of companies located in the industrial districts of Alicante footwear, since although several authors have made contributions to the internationalization process of the footwear industry in Spain (Miranda, 2014; Belso, 2006) their study has not been approached from the perspective of the industrial district as a pole of attraction. For this reason, the third specific objective (SO.3) has been proposed.

SO.3 Analyze whether these industrial districts of Alicante footwear serve as poles of attraction for foreign investment.

Keywords: footwear, SME, internationalization

RETHINKING CLUSTERS



RC2020 is respectfully balanced for gender equality



GENERALITAT VALENCIANA
Conselleria d'Innovació, Universitats, Ciència i Societat Digital

AORG/2020/A/039



RTI2018-095739-B-100
IP: Jose-Luis Hervás-Oliver

