

SoCool@EU

Sustainable Organisation between Clusters Of Optimised Logistics @ Europe



Deliverable n° D2.1: Cluster analysis report

**Within the context of Work Package 2 - Analysis and
integration of research agenda's of actors in regional clusters**

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List of Partners

Beneficiary n°	Partner	Country
1 (Coordinator)	Dutch Institute for Advanced Logistics Dinalog	The Netherlands
2	House of Logistics and Mobility HOLM	Germany
3	Asociación Logística Innovadora de Aragón ALIA	Spain
4	ULUND Øresund	Sweden/Denmark
5	Mersin Chamber of Commerce and Industry MTSO	Turkey

0 Executive Summary

The cluster analysis report delivered at hand is part of a project “Sustainable Organization between Clusters of Optimised Logistics @ Europe (SoCool@EU)” within the 7th Framework Programme of the European Union. The project is based on the ambition to create an open European platform for EU excellence with specific joint projects in sustainable and competitive supply chains and logistics connected with hubs and gateways. This European platform will enable research-driven regional clusters throughout Europe to collaborate and mutually learn in order to achieve more sustainable and competitive freight gateways and hubs with associated logistical services and transport operations. Five regional logistics hubs are cooperating in the project to develop their clusters and collaborate. Together, they build a leading network of logistics gateways in Europe.

- Dutch Institute for Advanced Logistics (DINALOG), Netherlands South West & Flanders Cluster - Belgium/Netherlands
- House of Logistics and Mobility (HOLM), Rhein-Main Region - Germany
- Asociación Logística Innovadora de Aragón (ALIA), Region of Aragón - Spain
- Lund University, Øresund Region - Denmark/Sweden
- Mersin Chamber of Commerce and Industry, Mersin Logistics Cluster – Turkey

In order to achieve the project objectives, the clusters formulate a Joint Action Plan of specific joint projects and activities following a regional cluster analysis as the scope of this present report. The study at hand has analyzed the participating clusters along selected, mostly publicly available statistics performance indicators, the quality of the regional business environment, the networking and cooperation structure as well as the specific context for innovation. An online-questionnaire, open expert interviews and literature research add to the data from public statistics.

Nearly all logistics clusters in the project show an above EU-average economic performance in terms of the Gross Domestic Product, employment concentration in logistics, and wages and salaries paid in the logistics sector. The clusters show a medium to high innovation performance in terms of patenting activity and scientific publications in logistics. The five regions represent essential areas of logistics (deep-sea hubs, airports, land-hubs and short-sea hubs) and have different transport modes as the focus of their regional modal split.

The quality of the regional business environment is mainly evaluated positively. Market demand, (production) factor endowment and the regional context for firm strategy, structure and rivalry in the clusters are generally better evaluated than the regional networking and support structure provided for by public authorities.

In terms of the intensity of networking and cooperation, all clusters are more internally interconnected rather than networking or cooperating with other logistics stakeholders in Europe. The results from the analysis of the specific context for innovation show that the increase of market share and of the quality and range of products, services and processes are the most important drivers for logistics companies to innovate. The lack or uncertainties of customer demand along with the cost of innovation are the largest barriers for innovation. Suppliers, business clients, fairs and exhibitions and informal contacts are among the major sources of knowledge relevant for innovation.

All clusters have identified a variety of joint needs for action, which they will translate into specific projects and activities within the subsequent definition of a Joint Action Plan.

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1 Background and Objectives

Europe has a central and leading position in the worldwide flows of transport, logistics and supply chains. Transport is an essential component of the European economy, with the industry accounting for about 5% of the EU GDP and the sector directly employing about 10.6 million people, around 5% of total EU employment. Total goods transport activities in the EU-27 are estimated to amount to around 3,800 billion ton-kilometres yearly. With this figure, Europe is among the five leading economies of the world, together with USA, Japan, China and Russia. Considering the values of exports and imports of goods, which cumulatively sum up to approximately 2,800 billion Euro in 2010, the EU-27 are leading worldwide, also with regards to both imports and exports separately (European Commission, 2011, 2012).

This successful chain of production and trade cannot operate without regional logistics hubs throughout Europe: they are vital to a well-functioning economy with competitive transport and logistics flows. The future prosperity of Europe will depend on the ability of these regions to remain fully and competitively integrated in the world economy, leading, among other things, to a single European transport area, enhanced technology research and innovation, modern infrastructure development and the linkage of transport beyond EU borders (EU White Paper on Transport, 2011). Logistics gateways as global nodes are a competitive edge to capitalize on. Many world regions are launching huge, ambitious transport modernisation and infrastructure investment programmes. The competition between regions in developing the quality of their business environment to attract investment and policy action has become more and more evident in the economic and political agenda. It is crucial that European transport continues to develop and invest to maintain its competitive position. The success lies in the support and development of strong and specialized logistics regions in Europe and effective action requires strong international cooperation.

This is exactly why, in the context of the 7th Framework Programme of the European Union, five regional logistics hubs are cooperating in the project “Sustainable Organization between Clusters of Optimised Logistics @ Europe (SoCool@EU)” to develop their clusters and collaborate:

- Dutch Institute for Advanced Logistics (DINALOG), Netherlands South West & Flanders Cluster - Belgium/Netherlands
- House of Logistics and Mobility (HOLM), Rhein-Main Region - Germany
- Asociación Logística Innovadora de Aragón (ALIA), Region of Aragón - Spain
- Lund University, Øresund Region - Denmark/Sweden
- Mersin Chamber of Commerce and Industry, Mersin Logistics Cluster – Turkey

These five regions represent essential areas of logistics (deep-sea hubs, airports, land-hubs and short-sea hubs) and build the network of logistics gateways in Europe. Their deviating names including “region” or “cluster” are due to official nomenclature by the respective consortium partners. The following map shows the consortium partner regions and their cluster institutions.

SoCool@EU is based on the ambition to create an open European platform for EU excellence with specific joint projects in sustainable and competitive supply chains and logistics connected with hubs and gateways. This European platform will enable research-driven regional clusters throughout Europe to collaborate and mutually learn to achieve more sustainable and competitive freight gateways and hubs with associated logistical services and transport operations. After its establishment, the platform will be open for participation by other regional clusters with a logistics

profile from Europe and beyond. The SoCool@EU consortium will actively promote this participation by other regional clusters.

The Mersin Logistics Cluster is integrated in the project as a mentoring region – the other cluster regions will share knowledge and provide access to a network of clusters beyond the project to support the capacity building and logistics cluster development in Mersin.

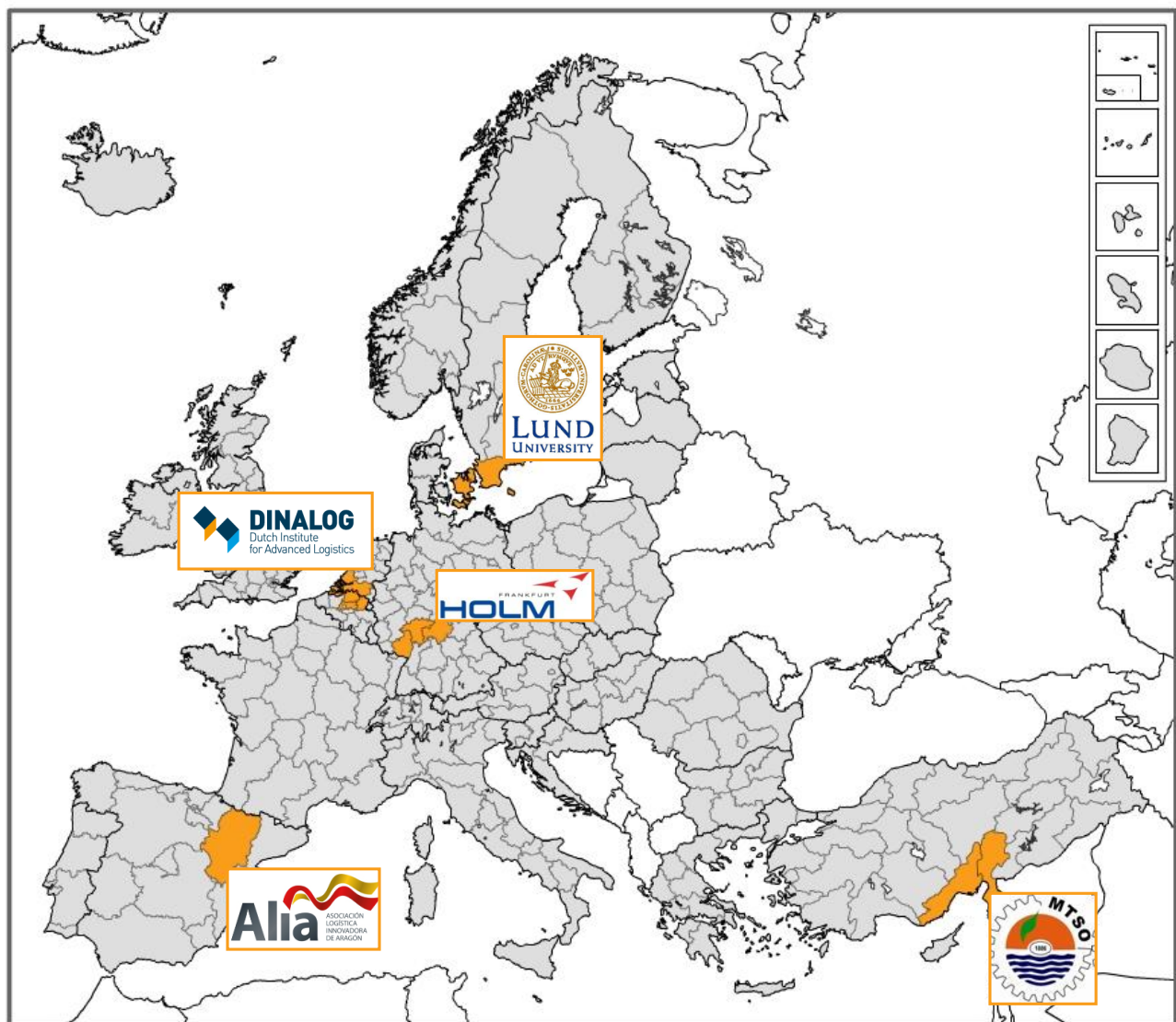


Figure 1 Logistics gateways in Europe – Partners of the SoCool@EU consortium

Source: Own illustration, 2012.

The project will:

- Foster trans-national cooperation between research-driven clusters as well as mutual learning between regional actors
- Develop and implement joint action plans at the European level to increase regional economic competitiveness
- Support the internationalization of the regional research-driven clusters
- Mentor regions with a less developed research profile

The basis for this platform is the existing strong triple helix collaboration between regional authorities, knowledge institutes and business entities within the participating regions. SoCool@EU will further develop, strengthen and expand the collaboration within the clusters and especially between the clusters on a European level. A Joint Action Plan, as the input for the European platform, will be developed. The cluster report at hand functions as the analytical basis of such a Joint Action Plan: It will give an insight into the regional profile, the strengths and weaknesses of the clusters and will develop recommendations for action as well as uncover joint project areas.

Figure 2 shows the project plan of the consortium according to the official Description of Work agreed with the European Commission. The figure reflects the logic of reaching the project objectives of creating a European cooperation and mentoring platform for research-driven regional logistics clusters and hubs with specific joint projects in Europe. The realization of an increased European collaboration for more sustainable and competitive freight gateways and hubs will be achieved by the formulation of a Joint Action Plan following regional cluster analyses.

Year 1 – 2012		Year 2 – 2013		Year 3 – 2014	
◆ Quality Assurance Plan (03/2012)		WP 1 – PROJECT MANAGEMENT			
WP2 - ANALYSIS		◆ Cluster Report & Workshops (09/2012)			
		WP3 - JOINT ACTION PLAN (JAP)		◆ JAP & Business Plan; EU Cluster Conference (06/2013)	
				WP4 - IMPLEMENTATION	
				European Platform with specific joint projects (12/2014) ◆	
Needs/SWOT Analysis (12/2012) ◆		WP5 - MENTORING			
				JAP mentoring region (12/2014) ◆	
Dissemination Plan (03/2012) ◆		◆ Website (06/2012)		WP6 - DISSEMINATION	
				Final conference & Dissemination Reports (12/2014) ◆	

Figure 2 Project Plan of SoCool@EU

Source: Own illustration, 2012.

These objectives are achieved along different work packages (WPs), each resulting in clear outcomes and deliverables. The consecutive modules WP2 Analysis, WP3 Joint Action Plan, and WP4 Implementation represent the core content modules of the project.

WP2 analyzes the clusters in the project for their competitive profiles in logistics and transport and derives needs for common action between the clusters. This analytical basis will be developed into a cluster report (present document), with workshops in the cluster regions verifying the results. WP3 is based on the analysis and will translate the common needs for action into specific joint project ideas and activities in order to implement them in WP4.

Aside from these consecutive content modules, the project management in WP1 builds the continuous frame to organize and structure the project. A work package 5 on mentoring - stretching from the beginning to the end of the project - supports the mentoring region of Mersin with strategically developing the local logistics clusters and to learn from the other clusters in the project. WP6 on dissemination constantly communicates the results of the project and functions as the interface to experts and the interested public throughout Europe.

2 Theoretical Concept – Clusters, Wealth and Regional Competitiveness

The present analysis is based on the idea that regions achieve competitive advantage and prosperity through the presence of so called “clusters” and the quality of the regional business environment these clusters provide. According to Prof. Michael Porter from the Institute for Strategy and Competitiveness of the Harvard Business School, who has also driven the topic with European experts from his worldwide Microeconomics of Competitiveness Network, clusters are...

“...geographically close groups of interconnected companies and associated institutions in a particular field, linked by common technologies and skills. Clusters take varying forms depending on their depth and sophistication, but most include end product or service companies; suppliers of specialized inputs, components, machinery, and services; financial institutions; and firms in related industries. Clusters also often include firms in downstream industries, producers of complimentary products; specialized infrastructure providers; government and other institutions providing specialized training education, information, research, and technical support.” (Porter, 2001)

As geographic concentration of directly or indirectly interlinked enterprises and institutions acting within a certain field they thus consist of a wide variety of actors who, with their individual activities, come together to form a regional value system. Strong and competitive clusters are a critical component of a good business environment.

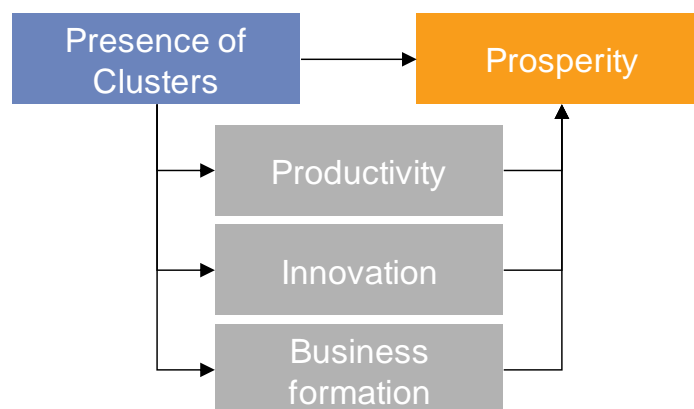


Figure 3 Clusters as drivers of regional wealth

Source: Raschke, 2009.

The presence of clusters has an effect on the wealth or prosperity of a region by influencing the level of productivity, innovation and new business formation in a region. Geographic proximity pools specialized input, such as labour, and quick accessibility to these production factors. Innovation can be generated through close collaboration of actors and quickly spread through short communication channels in the region. The rapidly diffusing knowledge about regional market developments give an early insight into new business ideas and lead to business renewal and new business creation.

According to Porter 2008, a critical driver of innovation output is the quality of the regional or cluster business environment in which firms operate. This environment is embodied in four broad areas, the so-called Porter Diamond Model, that affect the productivity that can be achieved as well as the rate of innovation of companies. These four areas have been set as the basis of the

analysis. Queried survey items in the online-questionnaire, which will be mentioned in the methodology chapter, were based on the four dimensions.

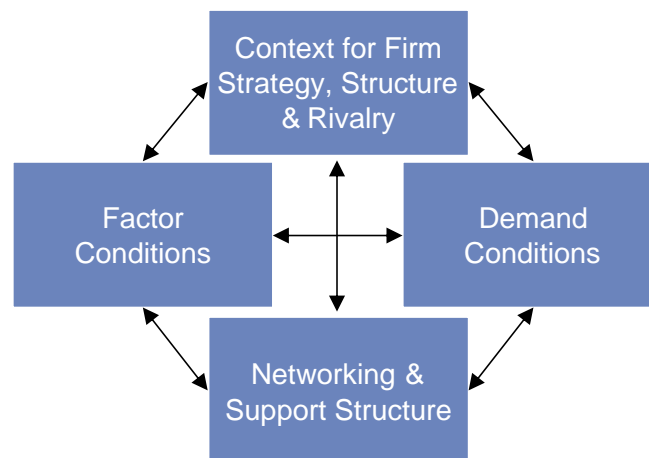


Figure 4 Determinants of the regional business environment

Source: Adapted from Porter, 2008.

Factor conditions refer to the presence of high quality and specialized pools of human resources, physical and scientific/technological infrastructures, sources of capital and other input factors that are tailored to the needs of particular industries.

Demand conditions address the quality of demand as the driver for creating and improving products and services. Sophisticated customers in the region or cluster press firms to improve and offer insights into existing and future customer needs. A globalized market demand in the cluster prepares companies for international trade.

The context for firm strategy, structure and rivalry refers to the local conditions that encourage investment and sustained upgrading of productivity and innovation and thus, regional competitiveness. Examples are the intensity and openness of competition between cluster firms, the overall business conduct or the orientation of companies towards competitive strategies.

The networking and support structure takes up the idea that firms need support activities for their operations and networking, such as the public support with the creation of sector-specific initiatives and networks or with the knowledge and technology transfer. This dimension has been renamed from the original “relating and supporting industries”. The reason is that, compared to the US, public support services next to related and supporting companies constitute an important driver for competitiveness in European clusters. Instead of leaving “government” outside the determining factors of the regional business environment, as in the original Diamond Model, the public support structure has been included in the analysis here. Similar thoughts can be found in latest cluster research (e.g. Ketels, 2006).

3 Method

The methodological approach used to analyze the clusters is a multi-method design based on qualitative and quantitative elements (Figure 5). Different research methods provide various insights and perspectives, which will help to better understand the complexity of the clusters and to give a more complete picture of them. It will also enable the identification of interconnections between different parts of the analysis (Morse, 2003). A comparable proceeding has been used to examine 15 clusters in the United States by the Clusters of Innovation Initiative Group under the direction of Prof. Michael Porter (Porter, 2002).

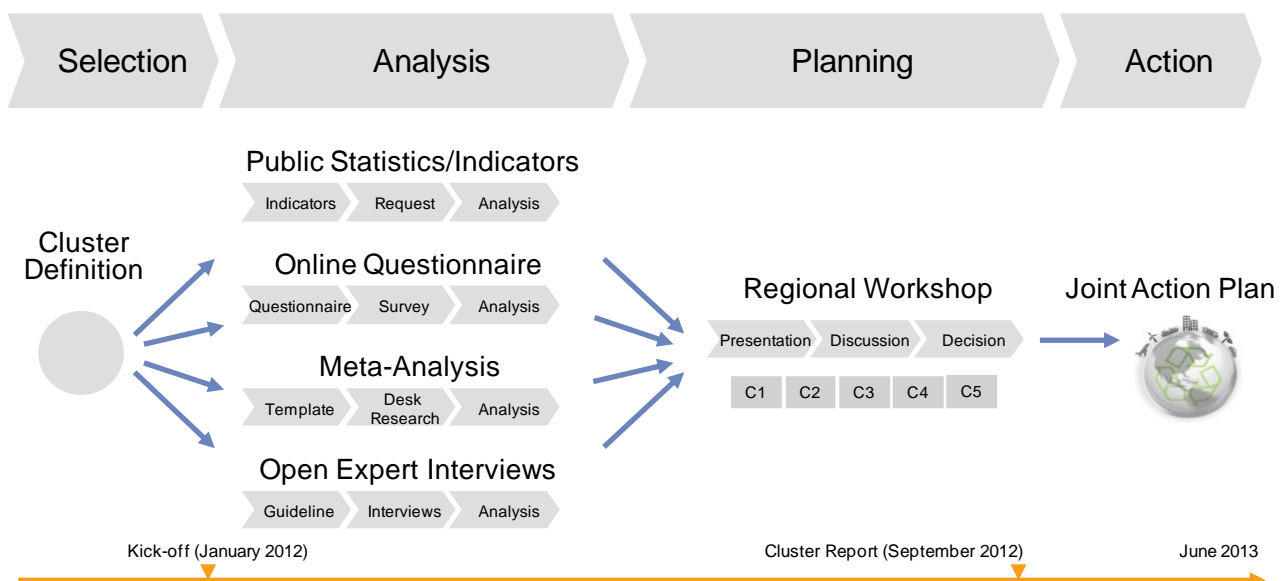


Figure 5 Methodological approach of the project SoCool@EU

Source: Own illustration, 2012.

Starting from the defined project clusters, the qualitative part of the analysis comprises open expert interviews to find out relevant project trends in logistics in the clusters and for international cooperation between the clusters and the meta-analysis as literature research complementing the primary analysis with secondary data. An online-questionnaire further analyses the general competitiveness of logistics in the cluster regions. Public statistics give an insight into the approximate economic and innovation performance of the clusters along selected quantitative indicators.

The analysis results from the four data-collecting instruments were discussed for every cluster in five regional workshops to verify and validate the individual results and to draw from the discussion ideas for projects and recommendations for action within and between the clusters. The objective is to develop the present report on the five clusters of the project, laying the basis for a Joint Action Plan, which will then be implemented.

In the analysis, the geographic demarcation of the clusters is based on the official NUTS classification of regions (Nomenclature of territorial units for statistics), a hierarchical system for dividing up the economic territory of the EU for statistical purposes. Due to data availability, the NUTS-2 level, as the level of the sub-country provinces, is used for the analysis. NUTS-3 as a more detailed level of geography (county level) - and even farer away from the country as the rough statistical unit (NUTS-0) or rougher larger administrative regions (NUTS-1) - has often times

irregular and wider gaps in statistics data. The geographic demarcation of the clusters using NUTS 2 has been developed together with each respective consortium partner (Figure 6).

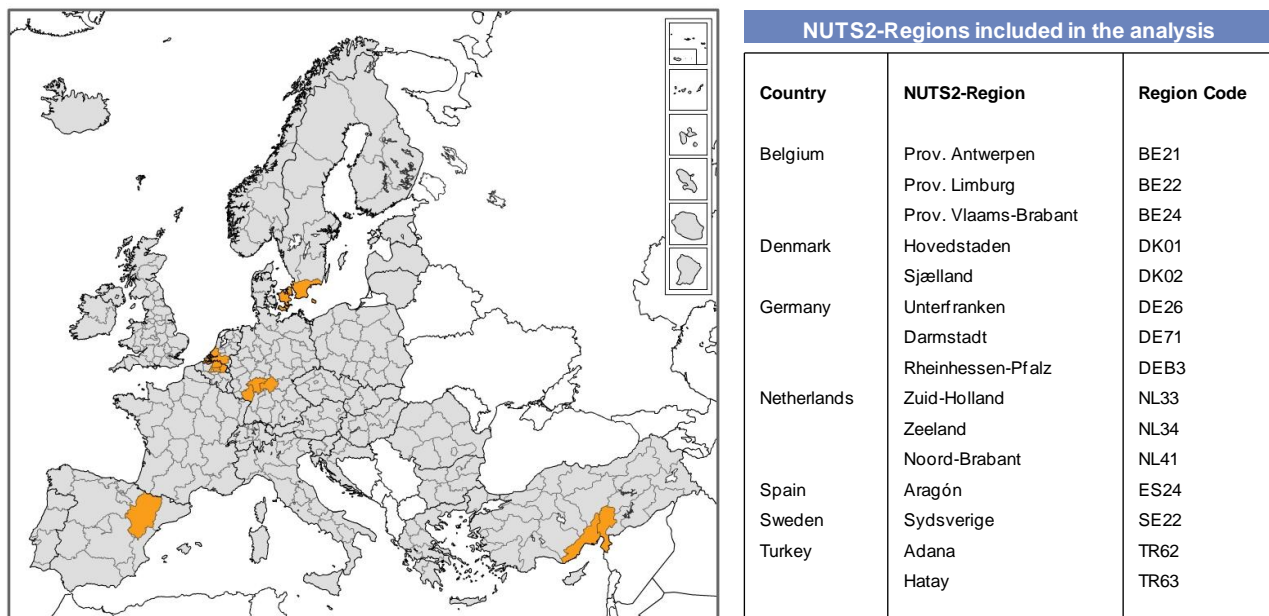


Figure 6 Geographical demarcation of the logistics clusters according to NUTS 2

Source: Own illustration, 2012.

The definition of the clusters according to function is based on the NACE classification of economic activity (Nomenclature générale des Activités économiques dans les Communautés Européennes). Table 1 lists the different NACE codes of the project-related cluster definition.

Cluster Definition: Industries included in the analysis according to NACE Rev. 2 classification			
Section	Sub-category	Description	Cluster
C	29	Manufacture of motor vehicles, trailers and semi-trailers	periphery
	30	Manufacture of other transport equipment	periphery
	33.15	Repair and maintenance of ships and boats	periphery
	33.16	Repair and maintenance of aircraft and spacecraft	periphery
	33.17	Repair and maintenance of other transport equipment	periphery
E	38	Waste collection, treatment and disposal activities; materials recovery	periphery
G	45	Wholesale and retail trade and repair of motor vehicles and motorcycles	periphery
	46	Wholesale trade, except of motor vehicles and motorcycles	periphery
	47	Retail trade, except of motor vehicles and motorcycles	periphery
H	49	Land transport	core
	50	Water transport	core
	51	Air transport	core
	52	Warehousing and support activities for transportation	core
	53	Postal and courier activities	core
J	61	Telecommunications	periphery
	62	Computer programming, consultancy and related activities	periphery
N	77.12	Renting and leasing of trucks	periphery
	77.34	Renting and leasing of water transport equipment	periphery
	77.35	Renting and leasing of air transport equipment	periphery

Table 1 Functional demarcation of the logistics cluster according to NACE Rev. 2

Source: Own illustration, 2012.

Section H represents the cluster core of logistics/transport according to Eurostat (European Commission, 2008; Block H: "Transportation and Storage"). Public statistics and indicators were gathered for the core only. All other sections are peripheral industries, which should be generally prone to interaction with the cluster core. The definition of the periphery of the cluster has been developed together with the consortium partners according to what were considered logistics-related sectors in the clusters. It was decided to remain on two-digit NACE code level and only use more detailed levels in exceptional cases. The reason is that data availability of statistics indicators, such as employment figures or wages, again decreases with more detailed levels of analysis.

Online-Questionnaire

One main pillar of the data collection was an online-questionnaire based on the Porter Diamond Model, asking for the quality of the regional business environment for logistics in the clusters. Each consortium partner distributed individually coded links of the online-questionnaire to contacts from their own data-base, addressing higher-level representatives from regional logistics and logistics-related companies. The following figure gives an overview of the examined items by the online-survey. The results will be discussed in depth in the analysis chapter.

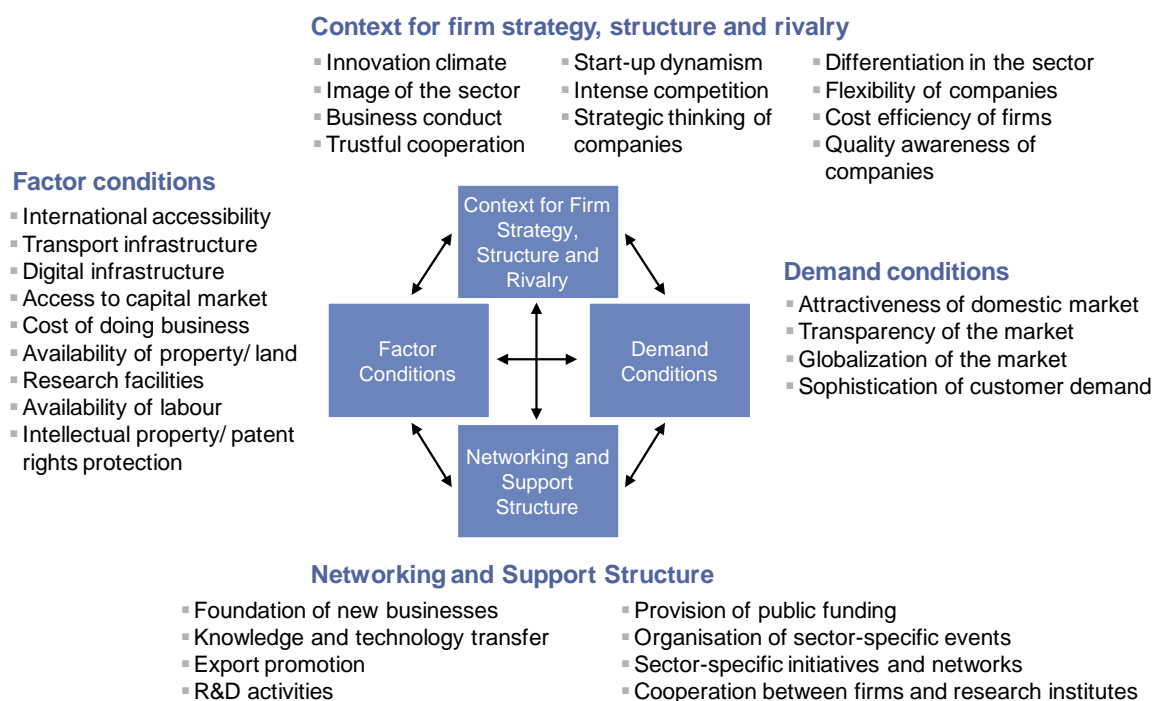


Figure 7 Examined items of the regional business environment in the clusters

Source: Own illustration, 2012.

All consortium partners decided to conduct the survey in their respective languages, except for the Netherlands South West & Flanders Cluster using an English version. The first part of the questionnaire asked for the main business purpose of the responding company and requests the participant to self-allocate the business of his company to the sectors from the cluster definition above. This first step allows the classification of the respondent into a certain industry or NACE category for the interpretation of answers. The questionnaire is then designed to query in depth the items of the regional business environment according to Porter's approach of regional wealth and the Diamond Model. In the majority of cases, a Likert scale was used to let the respondents make their ratings from "1" (e.g. very low) to "5" (e.g. very high); they could also indicate by clicking "yes"

or “no” whether the specific item is relevant for the success of the company. The combinations of the answers help to understand the competitive situation within the cluster and to identify recommendations for action when performing the analysis. If a respondent attests a high evaluation to an item and considers the item relevant, then a competitive advantage seems to be achieved within a cluster. If a respondent ranks the item low but considers it relevant, there seems to be a recommendation for action. If the respondent neglects the relevance of an item, there is no need to act. The respective variances and standard deviations thereby show the level of agreement. For further interest, they are included in the annex tables of the report.

Cluster (Institution)	NL South West & Flanders (Dinalog)	Rhein-Main (HOLM)	Region of Aragón (ALIA)	Øresund Region (ULUND)	Mersin Logistics (MTSO)
Number of survey links sent out	1,727	257	264	1,023	80
Number of respondents	159	58	54	58	25
Response rate	9%	23%	20%	6%	31%

Table 2 Response rates of the online-questionnaire

Source: Own, data basis online-survey, 2012.

The response rates of the online-questionnaire in the clusters are shown in Table 2. The choice of sample is subject to the individual partner selection; all partners selected contacts from their regional databases. Consequently, the results most likely suffer from a statistical bias in terms of the structure of the sample and the number of answers. The higher response rates than usual were achieved through personal and telephone follow-ups in the clusters. For reasons of comparability, the figures of HOLM refer to the links sent out from the HOLM database and are adjusted by a broad sample sent out in the region via Markus Data Base - Bureau van Dijk. The additional responses from this broad sample are excluded in the table above but are included in the analysis. In order to allow a differentiated interpretation of the results from the online-questionnaire, the annex includes a table showing the character of the responding companies within the respective cluster. It shows for each cluster region the type of the responding companies by their logistics or logistics-related sector, their approximate turnover per year as well as their total number of employees. For the purpose of the ease of reading and of presenting the core of the analysis, this document abstains from further elaborating this issue at this point. A correlation analysis between the background of the responding companies and their answer behaviour should be the objective of further research which is not within the scope of the present report.

Statistical analysis

Public statistics data was analysed for all clusters involved in the project, although the data availability was in many cases poor and irregular on the required NUTS- or NACE-Level. Table 3 gives an overview of the data availability of selected indicators in the project countries, where partners inquired at regional or national statistics offices the availability of the respective data.

The result is that some indicators were available in certain countries, many were not available; a few indicators are not applicable in a country through, for example, geographic circumstances (e.g. maritime transport in the Rhein-Main cluster in mid-Germany with no direct connection to any sea). Table 3 shows the irregularity with which data was available; it has been a challenge to find a common denominator among the countries and thus the cluster regions. The data availability and regularity need to be improved and harmonized among European countries in the future, especially when it comes to more detailed levels of analysis (e.g. NUTS-2/3 and 3- to 4-digit NACE). This will

provide for a more complete and reliable data basis as input for high-quality statistics analyses in the future.

INDICATOR (LEVEL)/COUNTRY	Belgium	Netherlands	Germany	Øresund*	Spain	Turkey
Innovation and entrepreneurship indicators						
NUTS 2 / NACE: Business R&D personnel						
NUTS 2 / NACE: Business R&D expenditures						
Science and education indicators						
NUTS 2 / Topic fields: Federal funds for research universities/R&D						
NUTS 2 / Topic fields: University graduation rates						
Economic performance indicators						
NUTS 2: Gross Domestic Product (GDP and GDP/capita)						
NUTS 2 / NACE: Gross Value Added (GVA and GVA/capita)						
NUTS 2 / NACE: Measuring investment activity 1: Gross fixed capital formation						
NUTS 2 / NACE: Measuring investment activity 2: Gross capital formation						
NUTS 2 / NACE: Corporate landscape: Number of local units						
NUTS 2 / NACE: Counting labour 1: Number of employees						
NUTS 2 / NACE: Counting labour 2: Number of persons employed						
NUTS 2 / NACE: Labour costs 1: Wages and Salaries						
NUTS 2 / NACE: Labour costs 2: Personnel costs						
NUTS 2 / NACE: Working hours						
Logistics and transportation performance indicators						
NUTS 2: Water transport (Maritime): Freight						
NUTS 2: Water transport (Inland): Freight						
NUTS 2: Air transport: Freight						
NUTS 2: Road transport: Freight						
NUTS 2: Road transport: Number of journeys						
NUTS 2: Railway transport: Freight						
Physical infrastructure indicators						
NUTS 2: Navigable canals						
NUTS 2: Navigable rivers						
NUTS 2: Highway km						
NUTS 2: Other roads km						
NUTS 2: Railroad km						

* Joint availability check of the cluster region

Available

Not available

Not applicable

No information

Table 3 Availability check for statistics indicators in consortium partner countries

Source: Own illustration, 2012.

Given this restriction of common data availability, the consortium partners relied on publicly available indicators from Eurostat as the main source of statistics data. The available data for certain indicators on Eurostat was oftentimes of good quality (e.g. air transport, maritime transport) and without major gaps. Due to the natural time lag of statistics in this database, indicators to measure the economic and innovation performance of the clusters collected in this project date back to the years 2009 and older. Partially, indicators were available already for 2010 and 2011. The statistics analysis has not been performed in such detail for Turkey as for the other clusters, as there is only limited data available for this associated country and mentoring region in the project. The decision has led to the definition of the following indicators as to be part of the analysis:

- Gross domestic product per head
- Transport volumes and shares according to the four transport modes (modal split)
- Employment totals in the transportation and storage sector (NACE category H/cluster core)
- Employment concentration in the transportation and storage sector
- Wages and salaries in the transportation and storage sector
- Number of local (business) units in the transportation and storage sector

Further indicators to cover for innovation- and knowledge-related figures have been patents and scientific publications in logistics - on NUTS-2 level for all project clusters - as part of a pioneering research effort by the consortium. The statistics indicators and the results will be presented and discussed in more detail in the following chapter.

Meta-Analysis

The meta-analysis is desk and literature research to complement the primary with secondary data and to provide additional facts and figures as well as new perspectives. This allows further interpretation and evaluation of the primary data and can be an inspiration for the analysis. All regional partners collected sources on their regional logistics clusters, such as papers, analyses, policy documents, studies or facts and figures from databases. Each partner drew important and relevant facts from these sources and categorized the information according to thirteen factors or codes that are related to the Porter Diamond Model of the regional business environment within the cluster.

- Future trends and challenges in logistics
- Demand conditions in the market (i.e. customer demand for products or services and the growth and evolution of the demand)
- Support structure for companies (e.g. business networks, public funding)
- Industry network/Cooperation (i.e. the type of networking and cooperation with different partners and the design of this cooperation).
- Industry structure (i.e. features and characteristics of the industry structure in the cluster)
- Competition
- Capital market structure
- Education
- Infrastructure
- Research/Innovation
- Soft location factors (statements concerning the quality of life or the engagement and embeddedness of the companies in the region)
- Business Sophistication/Competitiveness (sophistication of firms' operations and strategy)
- Projects (running and future projects dealing with logistics in the cluster)

For the exercise of coding the secondary sources along the thirteen areas above, the partners used the software of MAXQDA or alternatively a manual excel-template. MAXQDA is a qualitative data analysis software – also called QDA software – which supports all individuals performing qualitative data or content analysis by helping to systematically evaluate and interpret textual data. A more detailed presentation of the software and the template would go too far at this point. All partners provided for a summary and a reference list of the meta-analysis in English.

Open Expert Interviews

The open expert interviews with logistics professionals from science, business and regional institutions help to understand cluster potentials, challenges and project trends in logistics from the perspectives of triple-helix experts. Each partner conducted about 10-20 interviews, approximately equally with interviewees from companies, research/education institutes and political administrative organizations.

The interviewees were selected by the partners and are mainly higher-level representatives in the respective clusters. Field manuals with pre-fixed questions helped to give a clear structure to the interviews. These were conducted and recorded in local languages and then summarized in English in a documentation form. The completed documentation forms were uploaded to the MAXQDA software and could then be coded according to the 13-factor code system from the meta-analysis.

Regional Workshops

The regional workshops serve to discuss and verify the data from the previous analysis and help to identify projects and recommendations for action for the cluster on the regional and European level. They also help to establish and strengthen regional network cooperation, which can facilitate the implementation of the joint actions.

All consortium partners organized regional workshops with experts from the triple-helix. As a standardized procedure, a representative of HOLM gave a presentation on the results of the analysis of the cluster at the beginning and asked the participants to share their impressions of the results and comment on the findings. After the discussion, the respective consortium partners chaired the debate about relevant projects as well as recommendations of action for the cluster.

The following workshops took place in September and October 2012 (official minutes are available for all clusters):

- Netherlands South West & Flanders Cluster: 06-09-2012, at the Dutch Institute for Advanced Logistics, Princenhagelaan 13, 4813 DA Breda, The Netherlands and: 26-09-2012, at the Vlaams Instituut voor de Logistiek VZW - VIL, Flanders Institute for Logistics, Jordaenskaai 25, 2000 Antwerpen, Belgium
- Rhein-Main Region: 27-09-2012, at the HOLM Forum, Terminal 1, Frankfurt/Main Airport, Germany
- Region of Aragón: 02-10-2012, at the Chamber of Commerce of Zaragoza - - Paseo de Isabel La Católica, 2, Zaragoza, Spain
- Øresund Region: 12-09-2012, at the Maritime Development Center of Europe, Amaliegade 33B, 1256 Copenhagen, Denmark
- Mersin Logistics Cluster: 20-09-2012, at the Mersin Chamber of Commerce and Industry, Cankaya Mah. Ataturk Cad. Mtso Hizmet Binasi Kat 2, 33070 Mersin, Turkey

As an additional note to this methodology chapter, the words “cluster” and “cluster region” are used as synonyms in the following analysis. This owes to the different official names of the project clusters which sometimes refer to “region” as part of their official name (i.e. Region of Aragón, Øresund Region, Rhein-Main Region) and in other cases to “cluster” (i.e. Netherlands South West & Flanders Cluster, Mersin Logistics Cluster). “Region”, however, should not be confused with the statistical unit of a NUTS region for example. For this reason, the specific term of “cluster region” was coined to be unequivocal for the reader.

4 The Logistics Gateways in the European Context – Public Statistics

The present chapter analyzes the cluster regions of the project along selected quantitative indicators. The objective of the statistical data is to get an idea about the relative economic and innovation performance in a European context. Figure 8 provides an overview of the general profile of the cluster regions.

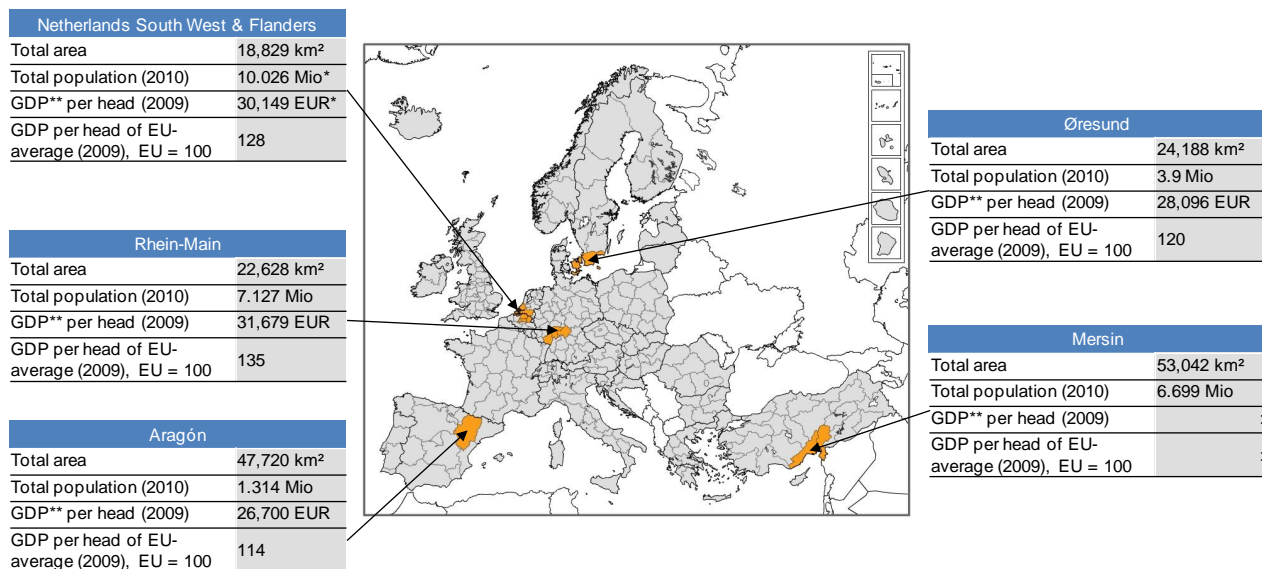


Figure 8 General profile of the cluster regions

Source: Eurostat.

Note: Partly no regional data for Turkey available.

* Values are marked „provisional“ by Eurostat.

** The GDP is a wealth indicator of a country/region. For reasons of comparability, values are given in Purchasing Power Standards.

Aragón and Mersin are the largest cluster regions with regard to land cover, with over 47,000 and 53,000 sq km respectively, they are larger than the country of Denmark. Having less than half the size of the Mersin Logistics Cluster, Øresund and Rhein-Main rank in the middle range. With a third of the size of Mersin, the Netherlands South West & Flanders Cluster is the geographically smallest of the five cluster regions.

In contrast to land cover, the Netherlands South West & Flanders Cluster represents the largest cluster region in terms of population and also has by far the highest population density. While the land cover of the Aragón Region and its total population result in an average population density of approximately 28 inhabitants per sq km, which is the lowest of all five cluster regions, the Netherlands South West & Flanders Cluster displays - with around 532 inhabitants per sq km - a density that is 19-times higher. Concentrating approximately 315 residents per sq km, the Rhein-Main Region ranks second. The Øresund Region and the geographically largest Mersin Logistics Cluster follow with 161 and 126 inhabitants per sq km respectively.

With regard to economic wealth, all project clusters, except for Mersin, have Gross Domestic Products (GDP) per head above the EU average, as can be concluded from Figure 8. In 2009, held against 262 European NUTS-2 regions, all project cluster regions rank in the highest quartile. Aragón is placed 58th, with 26,700 EUR PPS per person. The Rhein-Main cluster ranks 22nd, with 31,679 EUR PPS per person. The Øresund Region and the Netherlands South West & Flanders

Cluster rank 45th and 34th respectively. No regionalized data was available for Turkey. For the country as a whole, however, the 2009 GDP per person averaged 10,900 EUR PPS per person, which amounts to approximately 46% of the EU average and would lead to a rank among the lowest deciles of NUTS-2 regions.

The cluster regions differ significantly in terms of the regional importance of different transport modes. Transport volume data was retrieved from Eurostat. The objective was to examine the prevalence of the different transport modes in a European context. The data collection was relatively unproblematic for volumes in maritime and air transport. Eurostat publishes loaded and unloaded totals for each region in Europe, independently of the (inter-) national destination or origin. Maritime transport was an exception to some regions, as land-locked areas naturally have no transport figures in this mode. In the case of the Netherlands South West & Flanders Cluster and the Rhein-Main Region, inland waterways transport was applicable. It was, however, not possible to source data on inland waterway transport volumes in the Netherlands Southwest & Flanders Cluster so that the maritime figures were used.

As for road transport, the data on NUTS-2 level is problematic. While the national value is mostly available, data on exchange volumes with other European countries is often fragmented or confidential, thus making a comparative view across different cluster regions and countries difficult. As the analysis was to be made in a European context, nationally accrued freight values for 2011 – although from a data point of view better available – were neglected in favour of EU-15 figures from 2005 (always including the own country), the newest year for which transported volumes are available in an internationally uniform context.

Published data is fragmented for rail transport. There are only two reporting years available (2005 and 2010) and none features an international aggregate for each NUTS-2 region, such as the EU-15 for road transport. In order to be able to give at least an idea about the character of the cluster regions in regard to this transport mode, the available volumes for each region were aggregated and averaged by the number of transport relations they were based on, so to at least roughly account for the unequal or fragmented availability of data for different regions.

As a result, values for road transport (due to the outdated year and the EU-15 and national limitation respectively) and especially rail transport (due to the incompleteness of data) should only be taken as rough indicators with no claim of representing true volumes of the cluster regions. Improving the data availability for these two modes of transportation is clearly a field for action.

As can be drawn from Figure 9, with close to 100 million tons loaded and 200 million tons unloaded, the Netherlands South West & Flanders cluster region with its seaports of Rotterdam and Antwerp is an important maritime trade hub connecting Europe with other world regions. 80% of the goods loaded and unloaded in Belgium and the Netherlands in 2010 went through the cluster. Second-ranked as an important maritime trade hub is the Øresund Region. 19.2 million tons of outbound freight passed through the ports in the cluster region while 25 million tons of goods were received, thus representing over 33% of total seaborne freight loaded and unloaded in Denmark and Sweden in 2010.

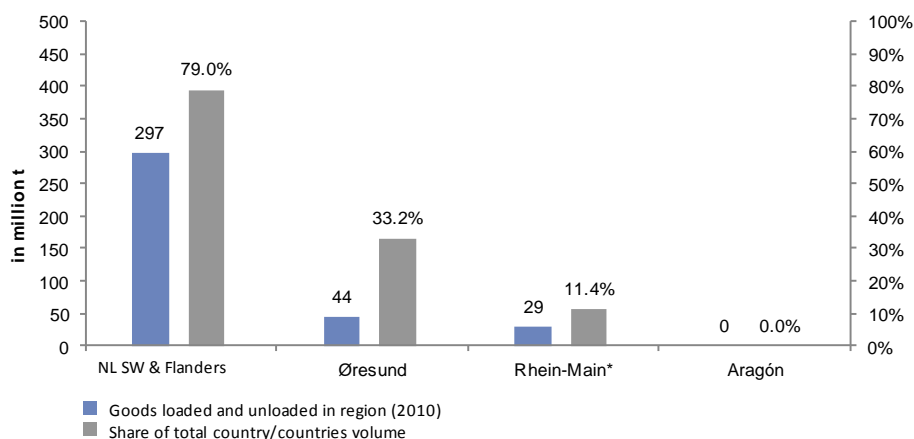


Figure 9 Maritime/Inland waterways transport

Sources: Calculations based on Eurostat (2010) and Destatis (2011).

Note: (*) Values for the NL SW & Flanders and Øresund Region reflect maritime transport, data on the Rhein-Main Region reflects inland waterway transport.

The Rhein-Main cluster region is land-locked and consequently has no maritime transport volumes. Yet, with the “Rhein” and “Main” rivers, it features two large navigable waterways. Out of 156 million tons unloaded in Germany from inland water vessels, approximately 19 million were unloaded in the cluster region (~12%). 10.3 million tons were loaded, representing approximately 10% of country-wide loading volumes. As Aragón is land-locked and not endowed with navigable rivers on its territory, maritime and/or inland waterways transport does not apply to the cluster.

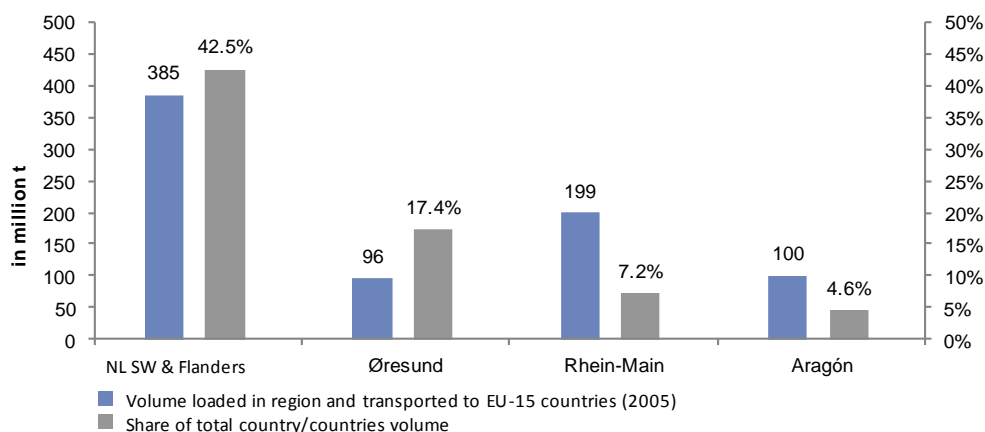


Figure 10 Road transport

Sources: Calculations based on Eurostat (2005).

Note: Latest available data for this indicator dates 2005.

As for road transport, the Netherlands South West & Flanders Cluster had 385 million tons loaded in the cluster region and transported to the EU-15 countries in 2005, which represented over 40% of the total volume loaded in the Netherlands and Belgium. Of the 550 million tons of road freight loaded in Denmark and Sweden and destined to all EU-15 countries in 2005, 96 million tons accrued in the Øresund Region. This corresponds to approximately 17.4%. With close to 200 million tons in land transport destined to all EU-15 countries in 2005, Rhein-Main accounted for 7.2% of the total national load volume in this transport mode. In terms of absolute road transport volumes, Aragón is similar to Øresund. Yet, with 100 million tons in 2005, the cluster region accounts for less than 5% of total Spanish volumes loaded and destined to all EU-15 countries.

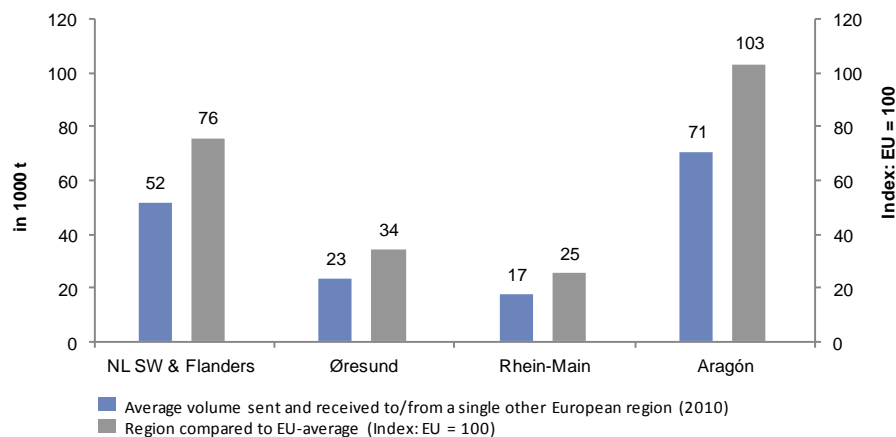


Figure 11 Rail transport

Sources: Calculations based on Eurostat (2010).

Note: In contrast to the figures on the other transport modes, this figure shows an index for the relative performance of the clusters.

With an average 52,000 tons sent and received per any corresponding NUTS-2 region in 2010, Netherlands South West & Flanders ranks below the EU average, as do other clusters, except for Aragón. While the Øresund Region is predestined for maritime transport, the freight haulage per rail in the area lags behind. 23,300 tons exchanged per average transport relation in 2010 represent merely a third of the EU as well as of the Denmark and Sweden average. With an average of 18,700 tons sent and 16,000 tons received per rail in one transport relation in 2010, the Rhein-Main cluster has the least significant volumes in rail of all cluster regions in focus, falling short of the EU average and also the German average of 21,300 tons loaded and 27,200 tons unloaded. Aragón, on the other hand, strongly relies on rail transport. It is the single project region matching the EU average for this transport mode, with an average of 70,500 tons exchanged with one NUTS-2 transport relation in Europe in 2010 and thus also exceeding the Spanish average of approximately 63,400 tons.

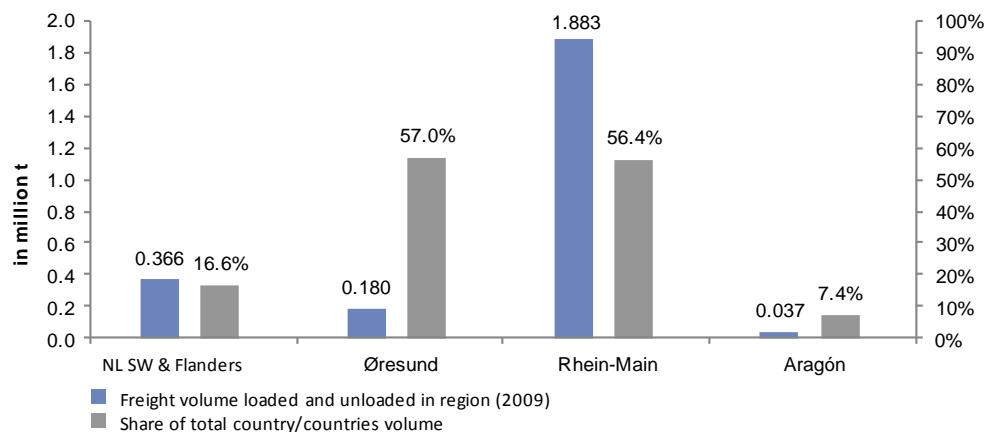


Figure 12 Air transport

Sources: Calculations based on Eurostat (2009).

As for air transport, data has to be interpreted differently to the other means of transportation. Aircrafts have relatively low transport capacities and high costs of operation per transported ton. As a consequence, predestined airborne goods include low volume but high value products as well as perishable and express freight. Air transport is a highly regionalized means of transportation, with

few locations bundling large volumes. Rounded 193,000 tons loaded and 172,000 unloaded in the Netherlands South West & Flanders Cluster in 2009 represented 16.6% of total air transport in Belgium and the Netherlands. 99% of these volumes accrued in the Belgian region of Vlaams Brabant. On the Dutch side, air freight operations locate outside the cluster region, with 1.32 million tons in 2009 alone in the vicinity of Amsterdam. The Øresund Region bears a significant importance in regard to air transport. Over half of airborne goods arriving or leaving Denmark and Sweden in 2009 were handled in the cluster region. The Rhein-Main Region enjoys a similarly strong position in air transportation. 1.88 million tons or 56.4% of airborne freight accruing in Germany passes through the cluster region, loaded and unloaded equally. The importance of Aragón for national air transport is limited. With 37,000 tons, this figure accounts for less than 10% of airborne freight volumes in Spain in 2009.

There was no comparable data on NUTS-2 level available for Turkey, except for rail transport. With an average received volume of 122,000 tons from any corresponding NUTS-2 region in 2010, rail haulage seems to play a central role for incoming goods to the region, exceeding the EU and Turkish average by 70% and 213% respectively. In strong contrast are sent volumes per rail, which only add up to 47,000 tons per transport relation, corresponding to 72% of the EU average and 115% of the Turkish mean.

In order to assess a region in regard to its industrial landscape and the performance of selected sectors, local employment patterns and company presence are generally accepted indicators. For the cluster perspective, not only total numbers are of interest but especially the concentration patterns of the regionally present industries; that is, the share of a certain industrial sector of the total regional economy compared to that same share in a reference area, such as the country the region is situated in or the European Union as a whole. For the purposes of this study, the average of the EU-27 was chosen as the appropriate reference area. This enables a comparative view of cluster regions from different countries resting on the same statistical baseline and thus excluding problematic country-specific concentration patterns biasing possible cross-country analyses. The location quotient (LQ) is a commonly used measure to calculate the relative concentration of a variable (Cortright, 2006). When calculating the concentration of employment for a region, the formula can be written as:

$$LQ = \frac{e_i/e}{E_i/E}$$

Where:

- e_i = Regional employment in industry i
- e = Regional employment in total (all industries)
- E_i = Reference area employment in industry i
- E = Reference area employment in total (all industries)

A location quotient greater than “1” indicates a higher share of employment in industry i in the region of interest than the share of industry i in the reference area. Values lower than “1” point towards a regional employment concentration in industry i below average. The LQ should always be interpreted in combination with absolute employment figures of a region. Figure 13 displays the employment concentration for the transportation and storage sector in Europe on NUTS-2 level (NACE category H).

The employment figures of the cluster core (corresponding to NACE category H) were sourced from Eurostat Structural Business Statistics (SBS) and, in the case of France and Malta, the

Labour Force Survey. With regard to total employment in a region or country, the SBS lacks too many important sectors of the economy to build a reliable manual aggregate. The total employment over all sectors for the regions and countries was thus sourced from the European Cluster Observatory. Due to a lack of data, all values for Turkey are based on the Labour Force Survey.

As Eurostat publishes data with a time lag, the newest available reference year is 2009, which is also the most current reporting year of the European Cluster Observatory. There was no possibility to account for growth dynamics, as the NACE Revision 2 industry classification on which the cluster definition is based was only adopted in the year 2008, rendering all preceding years based on NACE Revision 1.1 incomparable. Missing values were approximated by means of interpolation.

Focusing on the employment concentration on cluster level, Figure 13 reveals that the Rhein-Main Region has the highest concentration of all cluster regions in focus (LQ = 1.72). With a total employment of approximately 2,382,000 in 2009 and around 252,000 employees in transportation and storage, the region exceeds the EU average LQ by 72%.

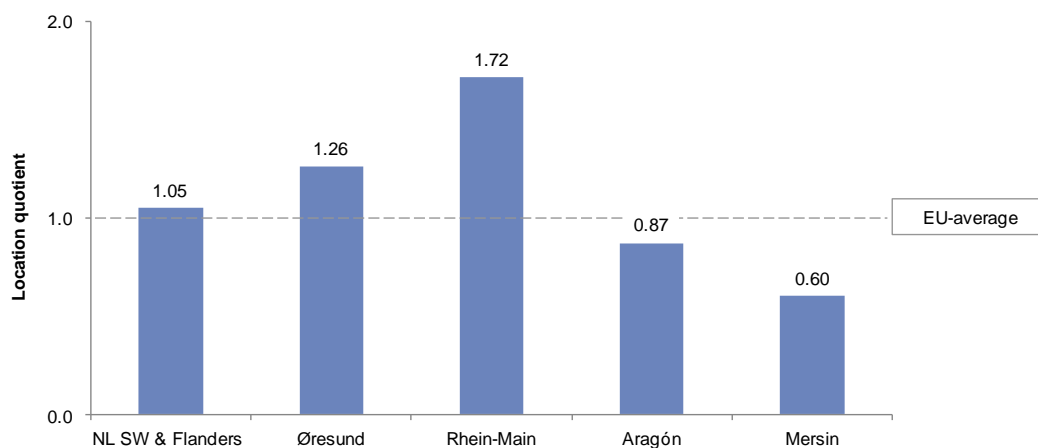


Figure 13 Employment concentration in transportation and storage (NACE H)

Sources: Calculations based on Eurostat (2009) and European Cluster Observatory (2009).

Together with Rhein-Main, the Netherlands South West & Flanders Cluster represents the largest cluster region in terms of employment. In 2009, approximately 254,000 out of 3,917,000 persons were employed in the transportation and storage sector, a share that yields a slightly above EU-average LQ of 1.05.

The Øresund Region displayed a LQ of 1.26 in 2009, therewith ranking second among the project clusters. In 2009, 109,000 employees were active in the transportation and storage sector, given a total of approximately 1,400,000 employees in the Øresund cluster.

In relation to the mean of the European Union, Aragón has a weak average employment concentration (LQ = 0.87). With 29,000 employees in transportation and storage and 540,000 in total in 2009, Aragón represents the smallest of the five cluster regions in total employment numbers. Among the Spanish regions, however, Aragón ranks fifth in terms of employment concentration and is thus among the logistics employment hotspots in Spain.

In the European context, with an employment LQ of 0.6, the logistics sector is underrepresented in the Mersin cluster. Also in comparison to Turkey, the region is below the country average (LQ 0.8).

Yet, the cluster region employs approximately 66,000 persons in the sector, with Adana ranking 6th of 24 Turkish regions (41,930 employees) and Hatay following on 14th place (24,640 employees).

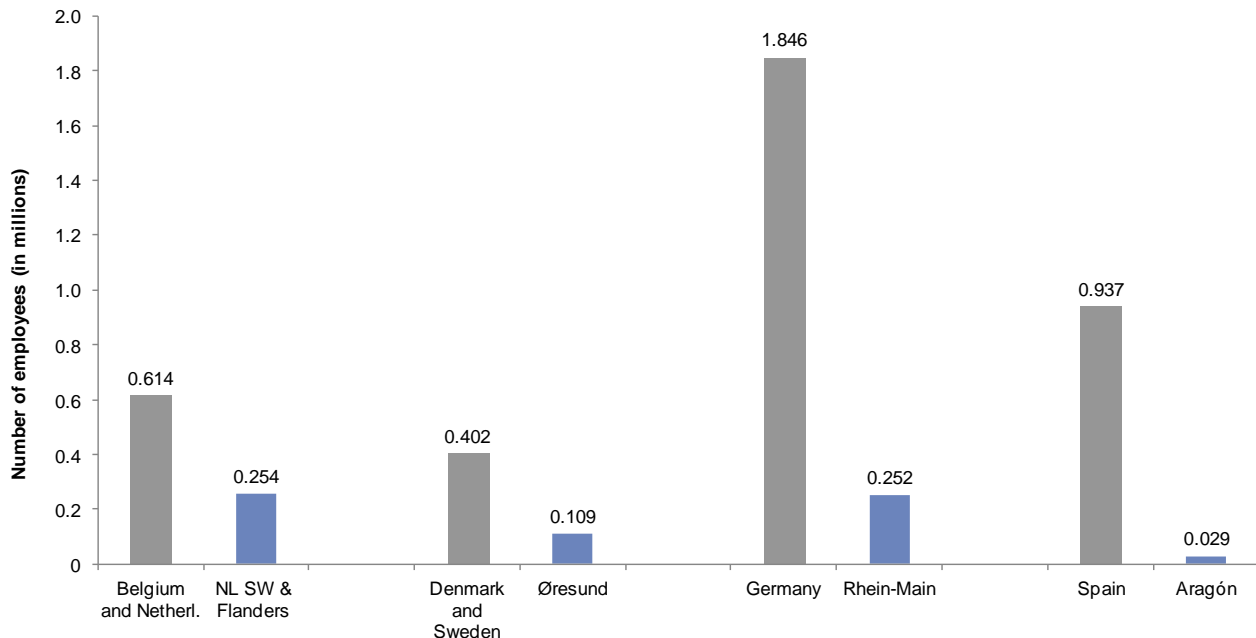


Figure 14 Employment figures in transportation and storage

Sources: Calculations based on Eurostat (2009).

Relative wage levels provide insights on the nature of the regional employment in a sector. Regional sectoral compensations exceeding the country average indicate, besides differences in working time, the presence of attractive jobs yielding high remuneration and thus commonly requiring special knowledge or competencies. The Structural Business Statistics (SBS) of Eurostat for 2009 are the basis of the following analysis. As in the case of employment statistics, the SBS do not include all important sectors necessary to be able to build a reliable total economy aggregate. For this reason, the analysis is restricted to an intra-sector view of the transportation and storage sector instead of a comparison to an aggregated value of total economy wages.

As for transportation and storage, all cluster regions, except for Aragón, have wage levels above the country as well as the EU-average in 2009. Øresund exceeds the EU average by 80%. Also compared to other parts of Denmark and Sweden, the industry in the cluster region pays close to 30% higher wages and salaries. While Øresund reveals the highest wage levels of all cluster regions in focus, Belgium and the Netherlands are leading in terms of the country average. With a mean of 32,694 Euro, remuneration is 47% ahead of the EU. The Netherlands South West & Flanders Cluster has a moderately higher remuneration average than the Netherlands and Belgium together (+9%) and ranks second of all clusters in focus. The German average for wages and salaries in transportation and logistics is approximately in line with the EU average. An employee in logistics in the Rhein-Main Region, however, can expect compensations a third higher than the country and the EU mean. The Region of Aragón stands out with remarkably weak compensation levels, with wage levels 16% below the EU and 10% below the Spanish average.

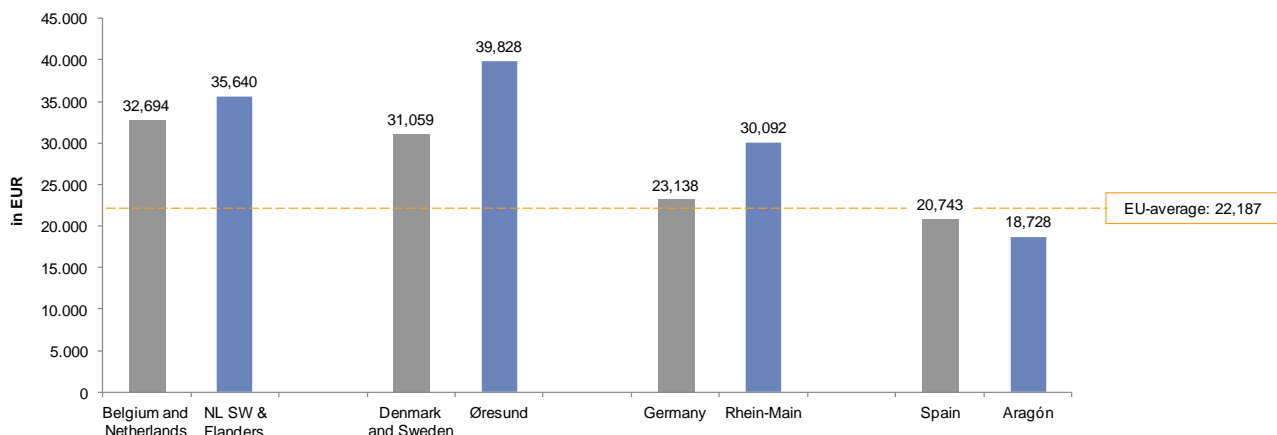


Figure 15 Wages and salaries per person employed in transportation and storage

Sources: Calculations based on Eurostat (2009).

The number of local business units complements figures on employment and provides for a rough indicator of the size of regional business. Similarly to parts of employment and wages and salaries, the number of local units was retrieved from the Structural Business Statistics of Eurostat.

Netherlands South West & Flanders is the largest cluster region in terms of company presence. Out of 19,150 local units in the transportation and storage sector in 2009, 9,245 or 48.3% were active in land transport. The main business purpose of 22.4% (4,288 units) is warehousing and support activities. As related to the number of employed persons in the sector, one company accounts on average for 13 employees.

11,352 business units in transportation and storage were active in Øresund in 2009, of which 8,648 were engaged in land transport (76.2%) and 1,389 in warehousing and support activities (12.2%). An average of 10 employees works for each company.

With 12,653 local units in transportation and storage, Rhein-Main is similar to Øresund. As with all cluster regions, land transport makes up the majority of the company landscape (8,379 units or 66.2%). Similar to Netherlands South West & Flanders, Rhein-Main has a share of more than 20% in warehousing and support activities (2,589 units). A local unit in the sector accounts for 20 employees on average.

The Region of Aragón has the smallest total company presence. Yet, its regional industry is based on the strongest relative presence of land transport. With around 6,127 local units, more than 85% of the total 7,161 business branches in transportation and storage were engaged in this subsector in 2009. Postal and courier activities amount to 543 business units (7.6%), whereas warehousing and support activities account for 479 units (6.7%). The regional industry employs four persons per local unit.

While transportation volumes, employment and company figures are valuable indicators to prove the presence of the logistics sector in a region, they are not sufficient to reflect on how sophisticated the activities of the industry are. The performance of the cluster regions in regard to their innovation activities in transportation and storage completes the statistical overview in this respect.

At this point, patenting and scientific publishing rates represent eligible proxies. In order to gain meaningful industry-specific results a keyword compilation based on scientific logistics dictionaries was created.

As for patents, categories related to logistics were pre-selected from the international patent classification system. These patent categories were scanned in the PATSTAT database (issued by the European Patent Office) for the year 2008 using the keyword compilation. Newer years were not considered, as results would not have been reliable due to the time lag of patent registration. A patent including one unique logistics keyword or several keywords related to the sector was counted as relevant and split up evenly among the referenced patent categories as well as the location(s) of inventor(s).

For scientific publications, journal categories of the Thomson Reuters Web of Science were identified and pre-selected for their potential to issue articles relevant for logistics. The category selection was again scanned by means of the above-mentioned keyword compilation. Results were allocated according to the locations of the authors.

In regard to registrations of patents relevant for logistics, the Rhein-Main and the Øresund clusters rank among the top 20% of EU-27 regions in 2008. The Netherlands South West & Flanders region performs within the top 40%. Two project cluster regions fall short of the EU-27 average of 0.63, with Aragón ranking in the lower 40% and Mersin in the weakest 20% of EU-27 regions.

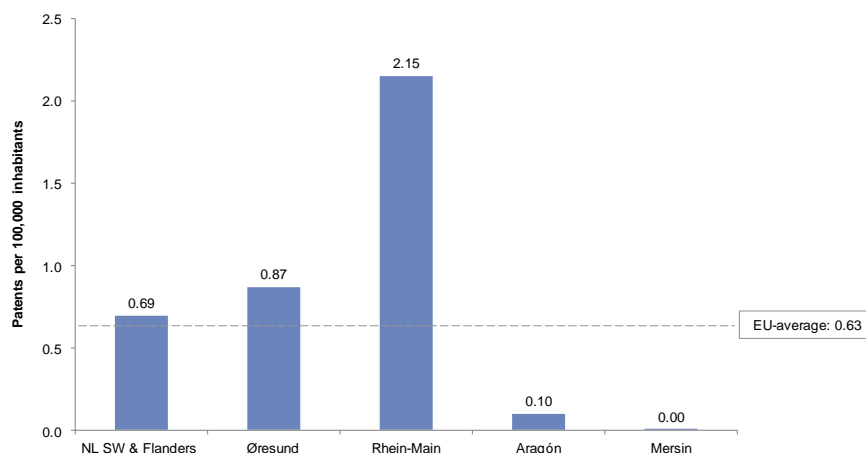


Figure 16 Patents in logistics per 100,000 inhabitants

Sources: Calculations based on own database (2008).

With regard to scientific publications, the Netherlands South West & Flanders Cluster and Aragón rank among the top 20% of EU-27 regions in 2010. Øresund follows within the top 40%, the Rhein-Main Region within the upper 60%. Mersin performs within the lower 40% of EU-27 regions.

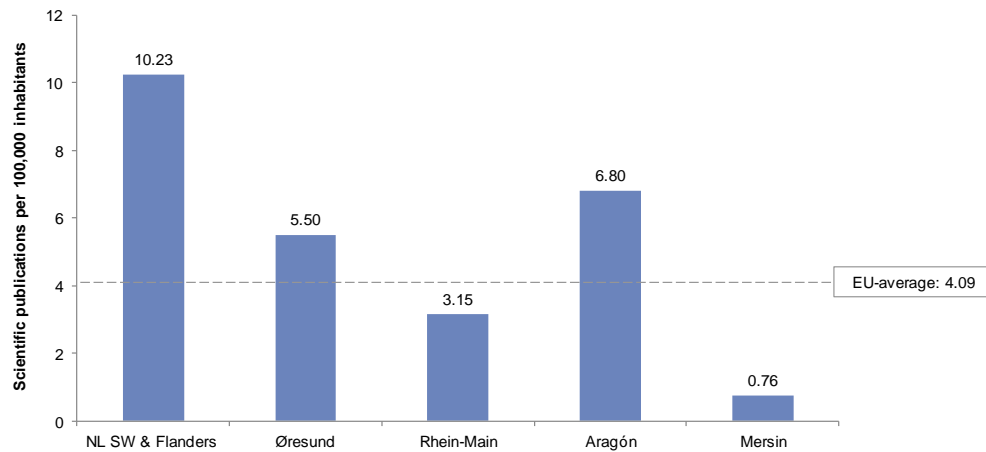


Figure 17 Scientific publications in logistics per 100,000 inhabitants

Sources: Calculations based on own database (2010).

The results on patents and scientific publications show an ambivalent picture for most of the regions. While the Rhein-Main Region seems to enjoy strength in practice-oriented research and innovation activities with a high number of patents, it falls behind in scientific publishing. The opposite is true for Aragón. While patenting rates are low, the research output in scientific publications is above average.

5 Logistics Cluster Analysis SoCool@EU

The following chapter merges and presents the results of the online-questionnaire, the open expert interviews and the meta-analysis in the respective cluster regions. Each cluster region will be described in detail according to the determinants of the regional business environment by Porter.

The then following sub-chapters deal with the networking and cooperation within the cluster regions and the specific context for innovation. The data basis for these sub-chapters is the online-questionnaire.

Accompanying figures underline the findings of the analysis; more detailed numbers presented in table format (e.g. variances or standard deviations of answers) can be found in the appendix of this cluster analysis report.

5.1 Netherlands South West & Flanders Cluster

The Netherlands South-West & Flanders Cluster represents one of the central hubs for seaborne intercontinental goods flows entering and leaving the European Union. In 2010, Rotterdam ranked largest port in Europe and third largest port in the world in terms of total cargo volumes (429,926 million tons), with Antwerp (178,167 million tons) on second and 17th place respectively (American Association of Port Authorities, 2010).

The cluster region is located in a geographically advantageous position in the centre of Europe, with a highly developed intermodal transport infrastructure and access to a wide, multinational hinterland. A strong logistics industry and a multifaceted company landscape, together with an advanced position in multiple fields of logistics and supply chain management research and education, make the region a leading knowledge and competence centre for global logistics.

5.1.1 *Evaluation of the Regional Business Environment*

Close to 60% of the respondents to the online-questionnaire agree on the importance of the cluster region as a centre for the logistics and logistics-related sector, although with a significant variance of answers. Only 16% would disagree. There is less consent in the future outlook. Approximately half of the respondents (47%) expect an increase in importance of the cluster region for the global logistics industry, while 42% are neutral and 11% negative on this assessment. The assessments of the importance of the Netherlands South West & Flanders Cluster for the logistics & logistics-related sector are shown in Figure 18.

The following analyses are based on the cluster methodology, that is, a combined view of all NUTS-2 regions in Belgium as well as the Netherlands. Results may differ for isolated analyses of each country.

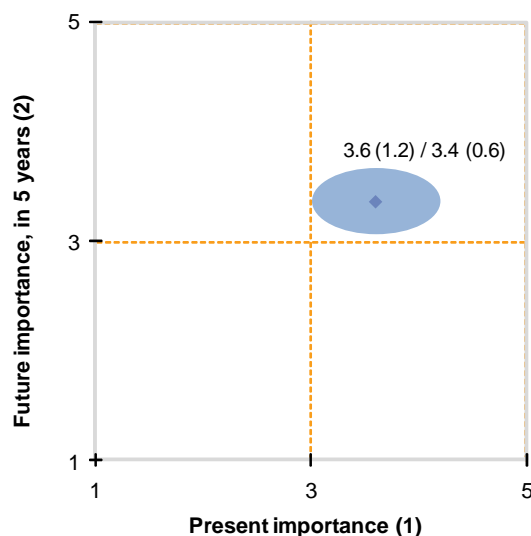


Figure 18 Importance of the Netherlands South West & Flanders Cluster for the logistics & logistics-related sector

Source: Own, data basis online-survey, 2012.

Note: 1) Question on the present importance of the region for the logistics & logistics-related sector, scale 1 „unimportant“ to 5 „very important“, n = 106. 2) Question on the importance of the region for the logistics & logistics-related sector in 5 years, scale 1 „unimportant“ to 5 „very important“, n = 105. The data point represents the average evaluation, the circle shows the variance.

Factor conditions

Figure 19 gives an overview of how respondents to the online-questionnaire evaluate different items related to the factor input for logistics operations in regional companies. The graph illustrates the average evaluation of the items according to a 5-point Likert scale and the average relevance in percent of answers.

Respondents are relatively content with the international accessibility of the cluster region. 93% of the respondents consider the international accessibility of the cluster as very good or good, with an average evaluation of 4.2. The area features good connections via road, rail and water. The multimodal infrastructure connects the main ports with the (European) hinterland. The cluster is internationally integrated. Rotterdam, Oss and Moerdijk are part of the European gateway services, a constantly expanding open network of transportation. Nevertheless, in contrast to the integration of land transport, there is currently no strongly integrated global port network (ECT, 2011; Port of Rotterdam, 2011).

With regard to the transport and digital infrastructure, the region also receives generally positive evaluations. 76% and 61% of the respondents respectively believe these items to be very good or good, with average evaluations of 3.9 and 3.7 respectively. Compared to the high relevance for business success, however, there still seems to be potential for improvement. Besides its advantageous geographical position, the region commands a deep-sea port area, which represents the most extensive and vital part of the logistics infrastructure. Europe-wide leading multimodal hinterland connections complement the region's unique competencies (Vlaamse Overheid, 2012).

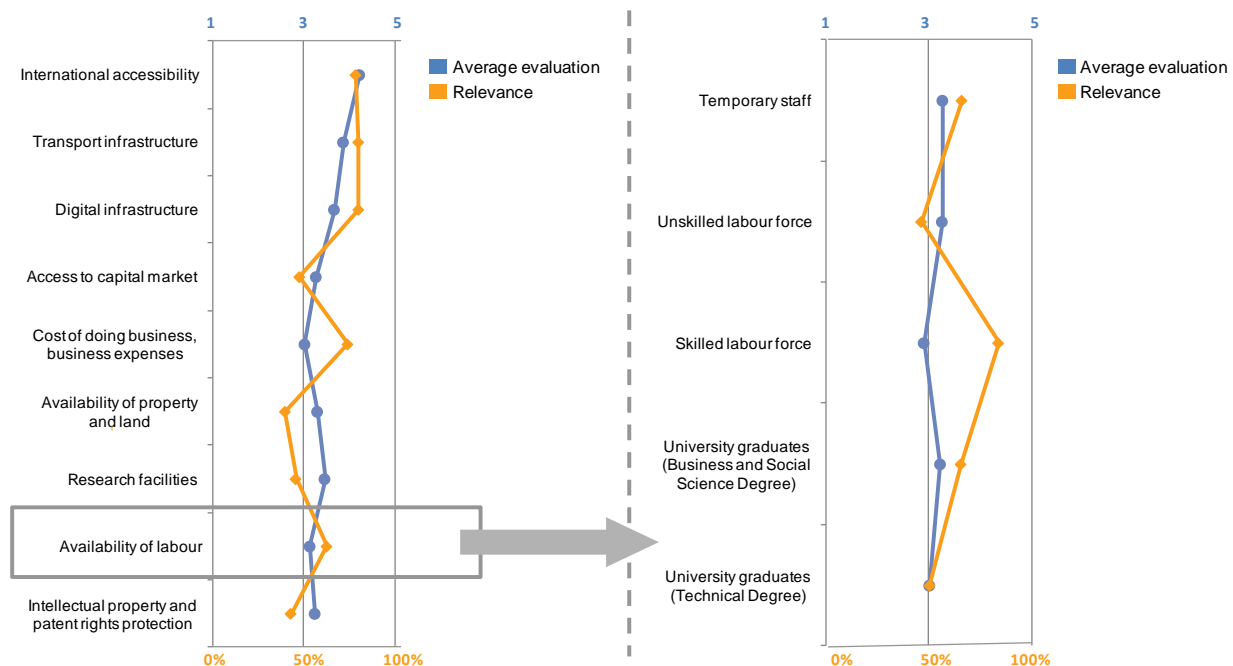


Figure 19 Factor conditions in the Netherlands South West & Flanders Cluster

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = very poor or very low, 3 = neutral, 5 = very good or very high, n = 97; 93.

In order to cope with the rising capacities of ships and the expected overall increase of transported volumes, the further integration of the different means of transportation into multimodal nodes as well as the integrated connection of the region to the hinterland is pivotal, as is also reflected in recent efforts for innovation (Commissie Van Laarhoven, 2008). The amount of intermodal inland terminals requires extension and is planned through the expansion of existing terminals and the construction of new ones (Vanelsander, T., Kuipers B., Hintjens, J. en Van der Horst, M., 2011). Cargo flows between the residing ports are expected to continuously increase (Algemeen Bestuur Regio West-Brabant, 2011). While the expansion of absolute capacities of infrastructure may be important, for the future, it is imperative to optimize the utilization of existing assets through enhanced integration efforts (Port of Rotterdam, 2011; Vlaamse Regering, 2009). With regard to road transport, there are still some important road links missing, such as the A4-South, the Blankenburg Tunnel and the A13-A16. Trucks have a market share of approximately 50% in transport from the Rotterdam port to the hinterland (ECT, 2011). Future efforts are targeted to shift transport volumes from road to water and rail. The connectivity of rail to water transport takes a central role in that issue. According to interviewed experts, however, rail is still not competitive in terms of speed, costs and flexibility compared to road transport, especially when it comes to crossing borders.

The digital landscape has been recognized as important for the general logistics profile of the region and the developments of the physical infrastructure. The primary topics in the region are the seamless integration of actors involved in logistics services and the coordination of multimodal and connected hinterland transport through ICT. Related concepts are, for example, synchromodality, which offers companies the ability to always select the most appropriate mode of transport, depending on the time and circumstances. Further areas are smart modes of transportation, intelligent traffic and mobility control and the development of the region as a hub for cross chain control centres (4-C) coordinating and directing European and worldwide supply chains (ECT, 2011; Topteam Logistiek, 2011).

The availability of property and land is rated neither especially good nor bad. Yet, this factor is also considered to be relevant for their business success by less than half of the respondents. Pressure on land is rising in dense logistics areas, due to the increasing transportation and storage volumes in combination with requirements for lower nuisance to the environment (Port of Rotterdam, 2011). As a consequence, space is becoming scarce in some parts of the cluster region, partly due to the fact that companies reserve land in order to be able to react flexibly to future developments. As a result, relatively many areas lay fallow, as they serve as a strategic reserve for companies (Port of Rotterdam, 2011). But depending on the part of the region, space for new industrial sites is still available. Taking Brabant as an example, the availability of space at the hubs Moerdijk and Roosendaal is still satisfactory, while several parts of Breda are used to capacity (TNO, 2008).

Access to the capital market does not receive high ratings by the respondents. But after all, not more than 50% of the questionnaire respondents deem it as important for their business success. The sector in the region seeks financing not solely for new investments but also for the maintenance and modernization of existing sites. According to an industry expert, the private equity market plays a limited role. An increasing part of investment will have to come from the private sector or foreign direct investment (Port of Rotterdam, 2011; Vlaamse Regering & Lieten, 2009a). The government offers a number of products and incentives targeted towards the logistics industry but overall, experts mention that financial initiatives are funded by the multinational companies themselves. Although the cluster region features a flourishing innovation landscape in the logistics sector, it has still been acknowledged to be difficult to acquire venture capital (Verweij, 2011). As for an interview expert, the government itself is mostly interested in hardware and infrastructure investments as basic preconditions for a well-performing logistics sector. Following a further interview statement, the cluster region is leading developments in customs, but cooperation with the European Union is further needed to not slow the process down. With regard to taxation, due to the multinational nature of the region, it became necessary to facilitate cross-border work (Vanelsander, T., Kuipers B., Hintjens, J. en Van der Horst, M., 2011). In order to remain competitive against other locations the overall tax burden should not be raised significantly (Port of Rotterdam, 2011).

The cost of doing business is clearly a problematic issue to deal with for the responding companies. It strikes with a high relevance but also with relatively weak satisfaction ratings. Only 34% of the respondents found the cost of doing business index as acceptable (very good or good). Clearly, the comparatively high costs are a consequence of the economic strength and attractiveness of the cluster region.

As with the cost of doing business, the respondents are also barely content with the availability of labour. Apparently, especially the strong demand for skilled workers cannot be matched by the labour force supply in the cluster region, and future scenarios mostly expect a further increase in labour demand. Already today, it becomes more and more obvious that educated logisticians are scarce and the competition for highly skilled labour is fierce (Commissie Van Laarhoven, 2008; Meerjarenprogramma Infrastructuur, Ruimte & Transport (MIRT) en Verkenning Antwerpen Rotterdam (VAR) & Visieafspraken MIRT-VAR, 2011; NEA en ABN AMRO, 2012; TNO, 2008). Although the region has broad logistics experience in the form of knowledge and educational institutes with many opportunities for practical and theoretical education in the logistics sector, labour problems remain, such as the low inflow of students in logistics education as well as the loss of experts to other sectors (NEA en ABN AMRO, 2012; TNO, 2008). Employment in the sector is not very attractive, given the specific requirements in terms of flexibility, pay and career path. A closely related issue is the general image of the sector, which is in need of improvement (NEA en ABN AMRO, 2012).

Consequently, attracting, retaining and developing current and future workers in logistics, and especially supply chain management, are central challenges for the cluster. As a part of this, public visibility and the image of logistics as a highly intelligent and growing sector as well as career perspectives require promotion (NEA en ABN AMRO, 2012). Active employee development as well as measures for enhanced employee satisfaction are further aspects of importance for the retention of knowledge (NEA en ABN AMRO, 2012).

Less than 50% of the respondents would consent to the relevance of intellectual property and patent rights protection as well as of the presence of research facilities for their business success. Ratings on quality do average 3.3 and 3.5 respectively. The region has an excellent reputation with regard to research and education in logistics and information technology (Topteam Logistiek, 2011). Examples of a long list are institutions such as the Technical University of Delft, Erasmus University and the Technical University of Eindhoven etc.

Demand conditions

According to the evaluation of the demand conditions by the respondents in Figure 20 and Figure 21, the Netherlands South West and Flanders Cluster is a promising market for logistics.

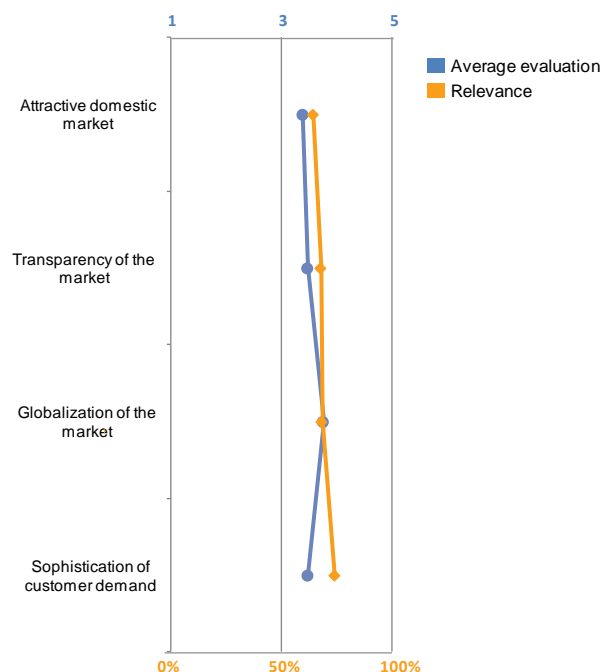


Figure 20 Demand conditions in the Netherlands South West & Flanders Cluster

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = fully disagree, 3 = neutral, 5 = fully agree, n = 97.

Respondents agree in the range of 65% to 74% on the relevance of the demand conditions for business success. 70% of the respondents confirm that the market in the cluster is globalized, with an average rating of 3.8. For 46% of the respondents, the regional market is attractive or very attractive (average rating of 3.4), and 55% would agree on a very good or good market transparency (average rating of 3.5). Although future economic growth is primarily expected in parts of the world other than Europe, the cluster region has an advantageous position, as its ports play a central role in connecting Europe with the rest of the world economy (Port of Rotterdam, 2011).

With the expected growth in volume terms, the logistics sector is already adjusting its processes as many businesses become more demand-driven (Flanders Institute for Logistics, 2011a). Customers increasingly order individual, integrated long-term solutions which require highly innovative approaches to deal with sophisticated specifications with regard to price, speed, reliability, service and, to an increasing extent, sustainability. Exemplary topics of ever increasing importance include supply chain configuration and control as well as reverse logistics (Commissie Van Laarhoven, 2008; ECT, 2011; Port of Rotterdam, 2011).

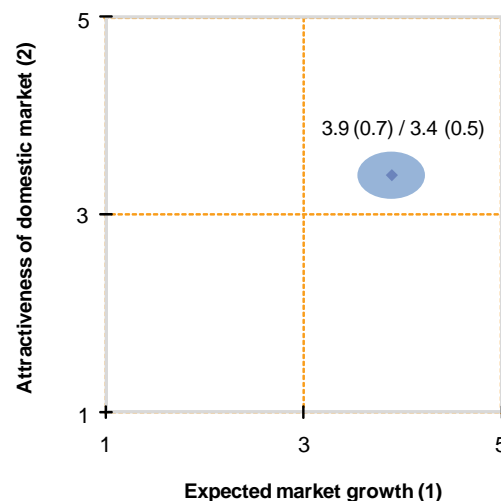


Figure 21 Market-attractiveness-growth matrix of the Netherlands South West & Flanders Cluster

Source: Own, data basis online-survey, 2012.

Note: 1) Question on the expected market growth of the logistics & logistics-related sector in the next 2-3 years, scale 1 „strong market shrinkage“ to 5 „strong market growth“, n = 80. 2) Question on the current market attractiveness of the logistics & logistics-related sector, e.g. rentability, scale 1 „very unattractive“ to 5 „very attractive“, n = 99. The data point represents the average evaluation, the circle shows the variance.

Context for firm strategy, structure and rivalry

A port cluster has to be able to provide a seamless multimodal transport chain, which reaches far beyond the port site. As shippers pursue the reliability, flexibility, cost efficiency and, to an increasing extent, sustainability of their logistics chain as a whole, they do not solely focus on the maritime component. Thus, the companies of the cluster region can rely less and less on the geographical position, but rather have to focus on their ability to offer optimal connectivity and integrated solutions for global logistics and supply chains (Port of Rotterdam, 2011).

As many customers of shipping services view the corridor between Le Havre and Hamburg as one location to get their business done, the competition between these European seaport regions is fierce. Thereby, the quality of the entire logistics hinterland network is an increasingly decisive factor. The port system in the cluster region has a strong position due to the excellent main ports, access to the European hinterland and highly trained personnel. Yet, other locations, such as Hamburg, Bremerhaven, Wilhelmshaven as well as Baltic and southern European ports, are rapidly developing, impeding the ambition of the cluster region to take over an ever larger proportion of the European distribution (Meerjarenprogramma Infrastructuur, Ruimte & Transport (MIRT) en Verkenning Antwerpen Rotterdam (VAR) & Visieafspraken MIRT-VAR, 2011).

The region has a rich landscape of foreign company production and distribution sites. Factors mentioned in favour of the location are the high degree of industrialization, the knowledge economy, the innovative solution-orientation or the strategic location and space (TNO, 2008).

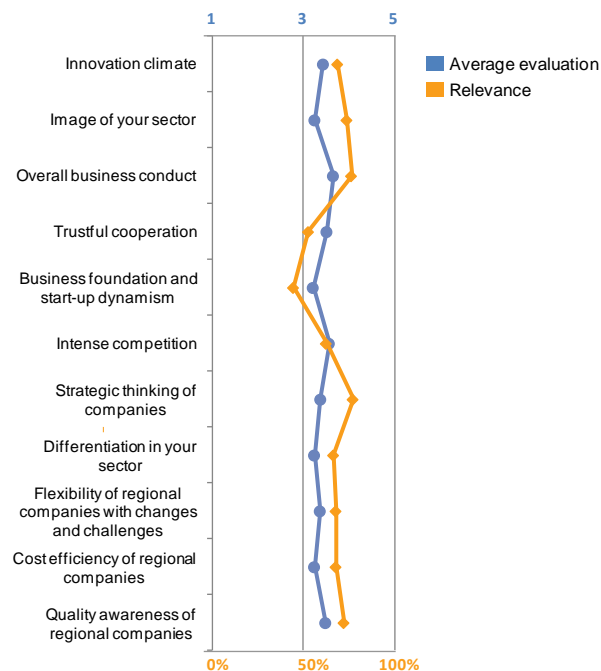


Figure 22 Context for firm strategy, structure and rivalry in the Netherlands South West & Flanders Cluster

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = fully disagree or very poor, 3 = neutral, 5 = fully agree or very good, n = 97.

54% of the respondents from the online-questionnaire would consent to the claim of a very good or good regional innovation climate (average rating of 3.4), 69% deem it as relevant for business success. For internationally active companies from diverse sectors, such as electronics and pharmaceuticals, the cluster region is a preferred location for the establishment of European distribution centres (TNO, 2008). Most large, internationally active logistics service providers as well as highly innovative ICT-companies, such as SAP and Quinteq, are present in the region (TNO, 2008). ECT in the port of Rotterdam is the leading and most advanced container terminal operator in Europe (ECT, 2011). The presence of a number of prominent companies entails and stimulates a wide range of specialized SMEs and spin-offs, including a large number of very specialized logistics support services (TNO, 2008). 36% of the surveyed companies observe very strong or strong start-up dynamics in the cluster, less than half would agree on the relevance of this factor.

67% of questionnaire respondents approve that companies are professional in their business conduct, with an average rating of this item at 3.7. Yet, only 48% perceive regional businesses to act according to a strategic plan, the average rating being 3.4. Both factors are viewed by more than 75% of the respondents as relevant for their business success. According to interview experts, the logistics industry in the cluster region mainly comprises small and medium-sized companies with fewer than 50 employees. As these companies often have to use all their resources to deal with the day-to-day business, they lack a clear strategic vision. Yet, this industry structure has also been viewed as strength, as a large number of SMEs endow the regional economy with high flexibility in business conduct. There is much potential for cooperation in innovation activities with these companies.

54% perceive the competition in the regional market to be very strong or strong, with an average rating of this item of 3.6. According to interview experts, a visible trend in the industry is the competition between participating actors in a supply chain in order to enhance their importance as

enabler or orchestrator in the respective chain. The competition between the different ports and the connected companies in the region fosters innovation and improves performance levels, which is necessary to remain successful in global competition (Port of Rotterdam, 2011). Despite the competition within the Antwerp-Rotterdam corridor, there is an interdependence and a clear interest for cross-border cooperation, especially when it comes to the efficient use of the available infrastructure and the development of connections to the hinterland as well as future industrial sites (Meerjarenprogramma Infrastructuur, Ruimte & Transport (MIRT) en Verkenning Antwerpen Rotterdam (VAR) & Visieafspraken MIRT-VAR, 2011). Partnerships with port regions in emerging markets will also have an increased role to play, as they support the logistical connection and integration of overseas growing markets to the cluster region, thus ultimately strengthening its position as a global and European transportation hub (Port of Rotterdam, 2011).

39% of the respondents would consider the cost efficiency of regional companies to be very good or good, while 58% would attest very good or good quality awareness to them. The average ratings amount to 3.3 and 3.5 respectively. 46% would think of the region's businesses to be able to react flexibly to changes, 44% observe significant differentiation efforts, with the average evaluations for these items being 3.4 and 3.3 respectively. As margins in operational logistics, such as delivery, collection, transportation, distribution, storage and repackaging, are low and under constant pressure (Topteam Logistiek, 2011), a further consolidation of the industry is expected. As for expert opinion, the low profitability is also a major obstacle to innovation. Companies in the region are increasing their efforts to move to higher value-added activities but still, especially SMEs often lack the capital (or know-how) to switch to a more profitable business model, such as 3PL. Under these circumstances, the trend towards vertical integration via joint ventures or partnerships and horizontal collaboration between shippers continues. According to 62% of the answers given in the questionnaire, trustful cooperation between companies in the region is usual practice.

Less than half of the questionnaire respondents answered that the sector enjoys a very good or good image in the region, the average evaluation being 3.3. However, 74% consider it important for their business success. Experts from the interviews mention that the image of the logistics sector is also of high importance for the economic welfare of the area. Although (regional) governments are mostly acting to account for this fact, the central role of the sector is not always acknowledged by all regional actors. In public opinion, it lacks the image of a fast-moving, innovative industry. This has direct negative consequences for multiple aspects, e.g. for the attractiveness of the sector for the skilled labour force. Individual companies and port authorities are investing in broad image campaigns through initiatives to create awareness and improve the sector image. Still, the target groups are slow in responding positively, as interviewees admonish.

Networking and support structure

The urgency for a shared vision for the cluster region is exigent, due to the proximity of several major ports with access partly to the same infrastructure and logistics activities in the hinterland. Cross-border cooperation between port authorities, governments and businesses has been established ("Delta Logistics"). Still, an overarching strategy of the government and the private sector for the further development of the complex area with its hinterland nodes, industrial activities and international links is missing until now. According to an expert, priorities of both national and regional governments within the Netherlands and Belgium are not aligned. Without concerted guidance and policy actions, however, the cluster region may face increasing inefficiencies in the utilization of its assets and bottlenecks in the multimodal infrastructure. Expanded contacts and cooperation between industry, port managers and governments in border-crossing projects is thus a central aspect for further sustainable growth (Meerjarenprogramma Infrastructuur, Ruimte & Transport (MIRT) en Verkenning Antwerpen Rotterdam (VAR) & Visieafspraken MIRT-VAR, 2011; Vlaamse Regering & Lieten, 2009b). Specifically with regard to the private sector, interviewed

experts criticize that there is little impulse for cross-border collaboration of companies. National egoism and cultural differences in management styles still need to be overcome.

An interview partner argued that cluster development at European level is imperative, as cooperation at local level is often not sufficient. Nevertheless, initiatives organized by the European Union with participants from many countries are mainly viewed sceptically, as it often resembles a forced collaboration without truly shared goals. Outcomes are mostly mediocre and actors are more interested in drawing funds for their own interests instead of really pushing content forward. Furthermore, a major disadvantage of EU projects is the extensive bureaucratic burden. Projects yield more benefits when conducted in a small scale, with flexible structures and timeframes, minor bureaucratic load and targeted at stimulating a few leading firms.

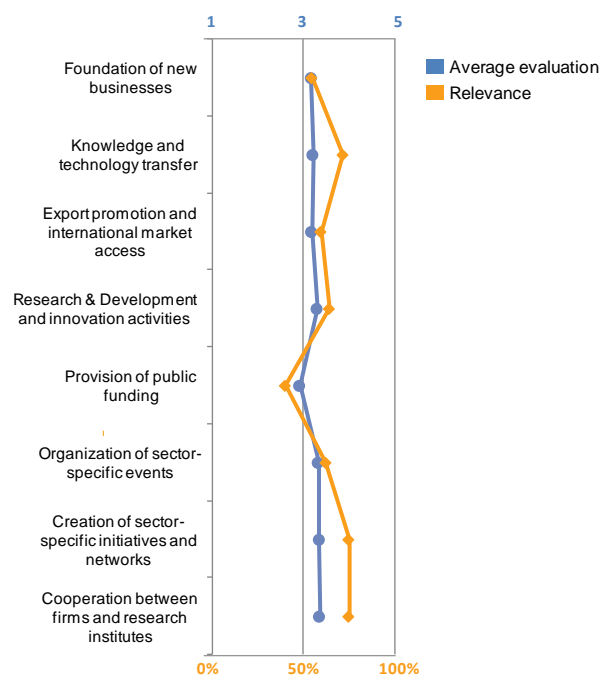


Figure 23 Networking and support structure in the Netherlands South West & Flanders Cluster

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = very dissatisfied or very poor, 3 = not applicable or neutral, 5 = very satisfied or very good, n = 90.

Coming to the provision of public funding, it is rated as relevant for their business success by 40% of the respondents. Asked about the quality of public funding, only 23% would consider it very good or good. The item has the lowest average evaluation of all items referring to the support structure, only 2.9. From the point of view of experts, the government is putting too much emphasis on supporting struggling regions and companies. They argue that funds are better spent on a few strong companies to support their pioneering role, ultimately pushing the whole of the region forward. Partly contradicting this view, a few interviewees also noted that major players do not require support, as they have no difficulties in raising the funds for their projects. Future emphasis should rather be put on connecting and supporting small and medium-sized companies, which otherwise lack resources, time and money for innovation projects.

As opposed to the general public funding, support in the creation of sector-specific initiatives and networks seems to play a more central role. 75% view it as relevant for their business. Average ratings on the quality revolve around 3.4. There is a wide landscape of supporting initiatives and

networks in the region. Examples include the Supply Chain Campus (SCC) in Breda, which serves as a catalyst for logistics innovation and cooperation within the Netherlands, with the ultimate target to develop and disseminate high-level logistics and supply chain education, knowledge and innovation (Commissie Van Laarhoven, 2008; TNO, 2008). The SCC hosts, for example, the Dinalog Institute, a platform specialized in knowledge transfer in the logistics industry (including SME) throughout the Netherlands via regional activities (Flanders Institute for Logistics, 2011b). As an example on the Flemish side of the cluster, the Flanders Institute for Logistics (VIL) was set up as a platform in order to support and enhance the sustainability and competitiveness of the logistics sector.

As a point of criticism, several interview partners noted that too many initiatives with too little effect are in existence. Furthermore, regions with insignificant logistics specialization are supported to the detriment of the real logistics hotspots. All this leads to an extensive fragmentation of available funds. Policymakers should focus on the industry hub areas and cut investments in locations and initiatives not yielding significant returns. At least, there is a need for more integrated and coordinated initiatives.

Closely connected to the presence of sector-specific initiatives is the support for knowledge and technology transfer. The average evaluation for this item is 3.2, while more than 70% consider it as relevant for their business success. Results are within a similar range regarding the support in R&D and innovative activities (rating of 3.3; 64% relevance). As a large part of the industry in the cluster region is constituted by SMEs, for which the threshold for innovation is still relatively high, initiatives to disseminate knowledge among the local company base are central to help the smaller companies participate in joint innovation. On the contrary, although a latent willingness to collaboration and exchange is present, cooperation is difficult, as companies often view each other as competitors. In joint projects, partners would have to commit to a dependency relationship and benefits often only pay off in the long term and not necessarily to those parties that invested the most (Commissie Van Laarhoven, 2008). There have been suggestions that the government should reduce these barriers by subsidizing parts of innovation projects (Commissie Van Laarhoven, 2008). As for the Netherlands, the above-mentioned industry initiatives and networks as well as universities and knowledge distribution centres take efforts to enhance collaborative activities (Commissie Van Laarhoven, 2008; TNO, 2008).

When it comes to cooperation between firms and research institutes, 47% have a good or very good picture of the cluster region, at an average evaluation of 3.4. 75% deem it as important for business success. According to interview partners, there still seems to be a gap between companies and universities, even though there is much potential for multinational efforts, as research activities have no geographical limitation.

With an average rating of 3.2 and a relevance of 55% and 60%, support with the foundation of new businesses and the quality of support with international market access rank among the weakest aspects in the support structure. Regional support with regard to sector-specific events shows similar importance but a slightly higher evaluation of 3.3. According to an interview partner, more than 100 local and regional events, such as lectures, workshops, social events and networking meetings, are currently on the agenda in order to facilitate knowledge transfer and provide for an improved image of the logistics sector.

5.1.2 Networking and Cooperation Intensities

Looking at the cluster core in Figure 24, four out of five sectors have strong networking ties within their own industry. An estimation of the intra-industry networking intensity for postal and courier activities is not given due to a lack of data. With regard to inter-industry networking in the cluster core, especially the land and water transport sector as well as the warehousing industry maintain strong links with each other, pointing towards the competencies of the region as an intermodal maritime hub for transport volumes entering or leaving Europe. While postal and courier companies network averagely with the aforementioned three, they maintain a strong connection to the air transport industry, which is intuitive considering the means normally used to transport, for example, express mail. Apart from the postal and courier industry, the air transport sector only sustains some relations to the warehousing industry. There is little connection of air transport to land and water transport companies.

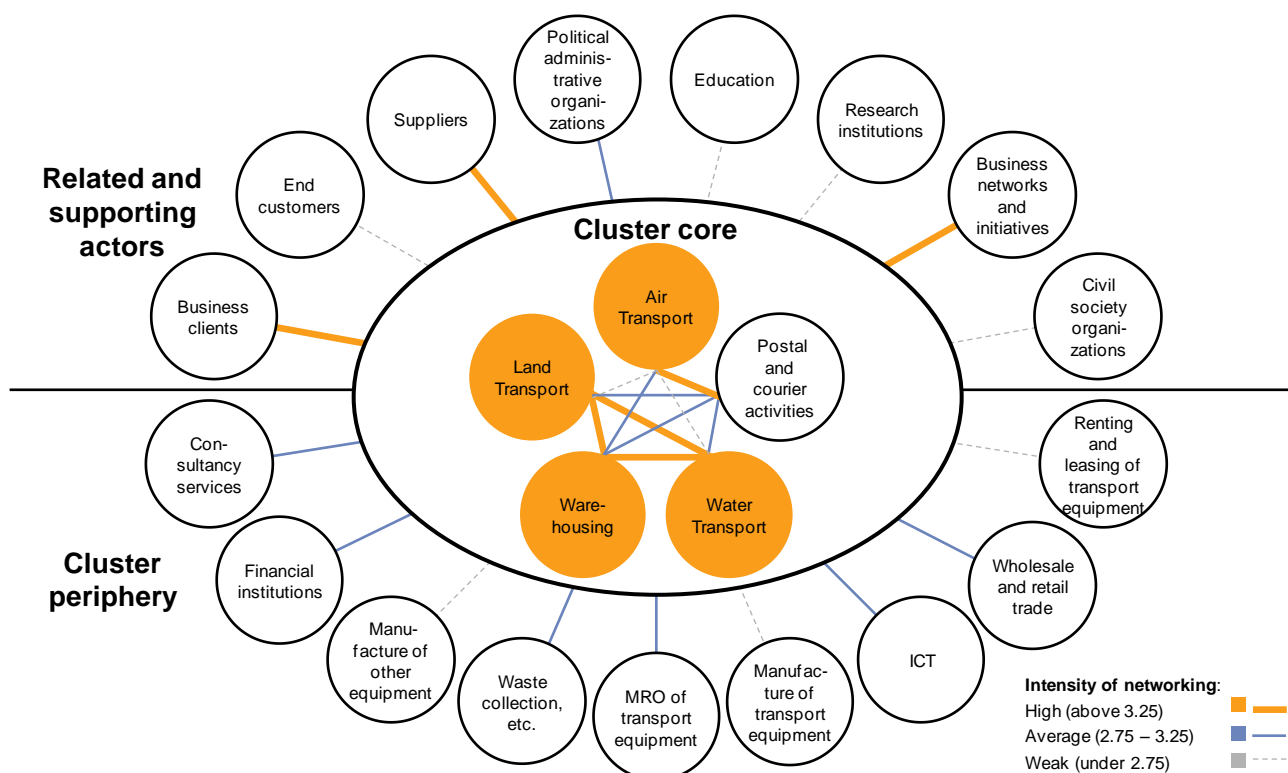


Figure 24 Cooperation intensity in the Netherlands South West & Flanders Cluster

Source: Own, data basis online-survey, 2012.

Note: Based on the average evaluation of the cooperation intensity with respective cooperation partners, scale 1 = no cooperation to 5 = very intensive cooperation, number of ties = 2127.

The networking between the cluster core as a whole and the cluster periphery mostly shows an average intensity. In contrast, the cluster core maintains an ambivalent relation to the related and supporting actors. While networking with business networks as well as with suppliers and business clients is strong, there hardly seem to be any other links.

Similar to the networking within the cluster region, the regional cluster core maintains strong relationship intensity to the cluster core industries and business clients in other European regions. Yet, except for an average exchange with business networks and initiatives, there are no other significant linkages existing on European level.

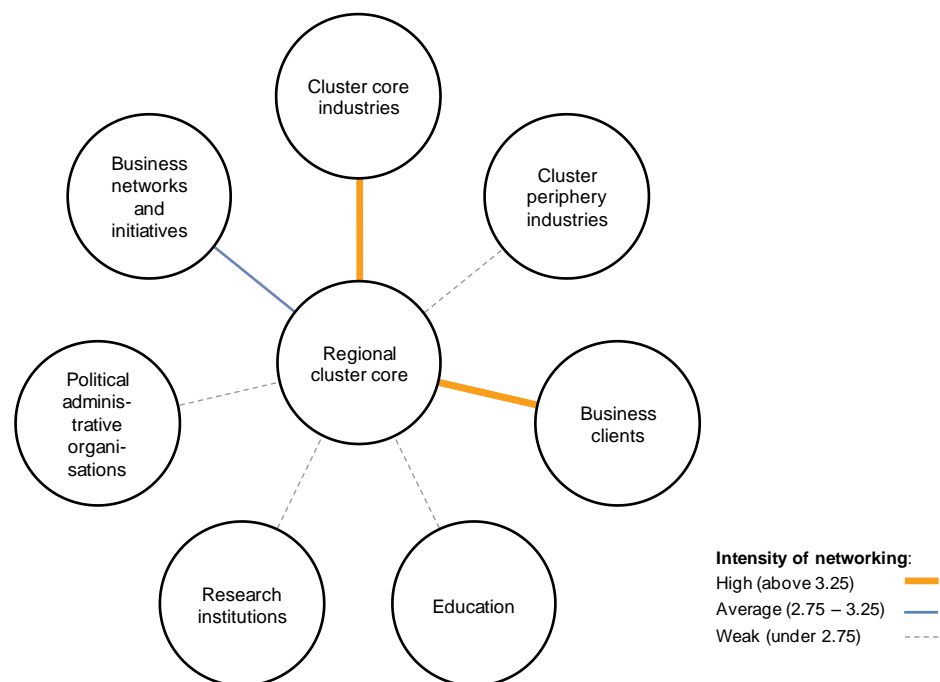


Figure 25 Cooperation intensity of the regional cluster core with Europe

Source: Own, data basis online-survey, 2012.

Note: Based on the average evaluation of the cooperation intensity with respective cooperation partners, scale 1 = no cooperation to 5 = very intensive cooperation, number of ties = 1279.

5.1.3 Specific Context for Innovation

Increasing or maintaining the market share is the most central motivating factor for innovation, with 90% approval on importance and close to half of the respondents also considering it very important (Figure 26). Further very important drivers pertain to the products, services and processes of companies in the region, such as the enhancement of quality and the increase of the product range. With less than one out of four respondents agreeing, environmental impact reduction, the compliance with regulatory requirements and concerns for health and safety do not seem to be decisive drivers for company innovation in the region.

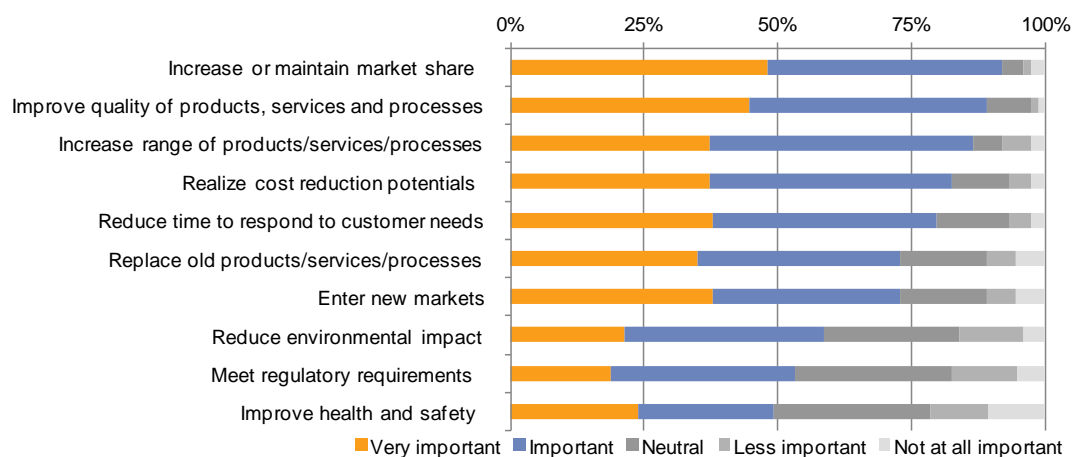


Figure 26 Drivers of innovation for companies in the Netherlands South West & Flanders Cluster

Source: Own, data basis online-survey, 2012.

Note: Question on important drivers for firm innovation, n = 75.

When it comes to barriers for innovation, Figure 27 highlights that economic factors, such as the lack or uncertainty of customer demand for innovation as well as the costs of innovation, stand out as the largest barriers for innovation. In contrast, regional companies are not afraid of being copied. The regional industry further seems not to suffer from a weak support and knowledge base, as the availability of external services and know-how was rarely seen as limiting for innovation.

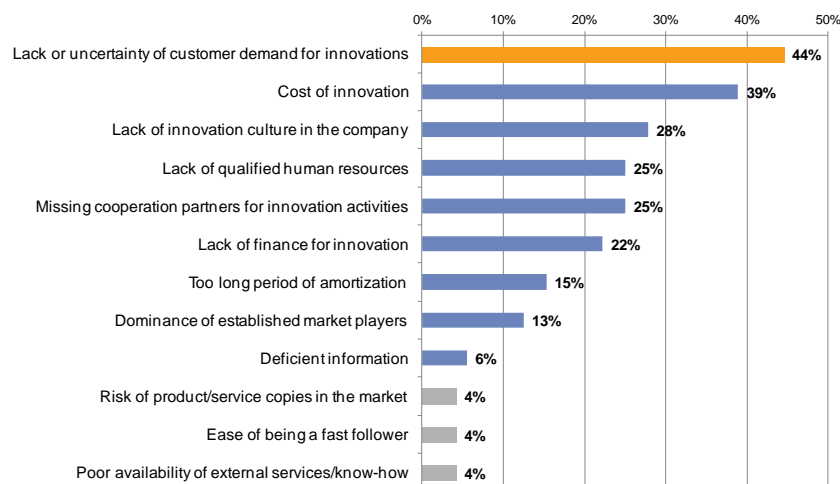


Figure 27 Barriers for innovation in companies in the Netherlands South West & Flanders Cluster

Source: Own, data basis online-survey, 2012.

Note: Question on largest barriers for firm innovation, n = 72 (max. 3 selections possible).

In the online-questionnaire, respondents were asked to indicate how often they receive knowledge from different sources which is relevant for innovation. Figure 28 gives an overview of selected sources and the frequency of knowledge transfer between these and the responding firms in the region. The order is given according to the accumulation of the categories “Always” and “Very often”.

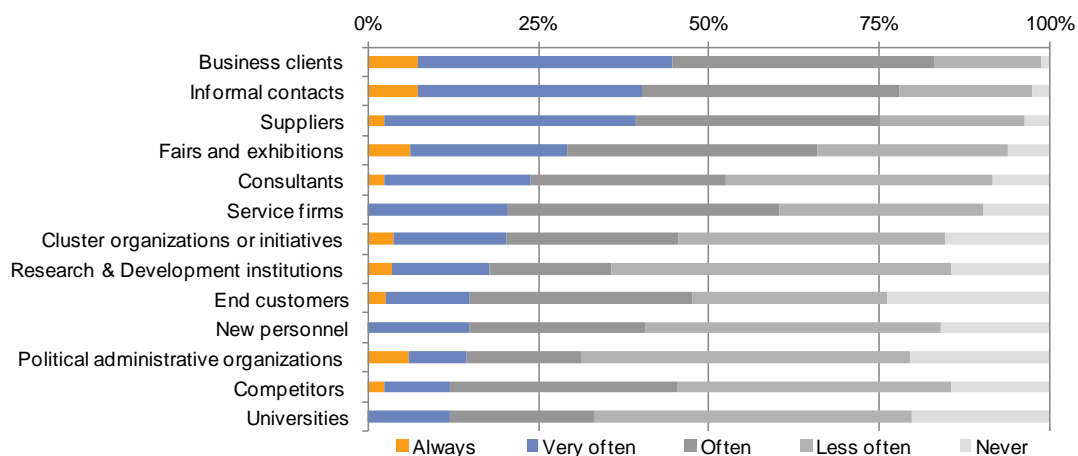


Figure 28 Sources of knowledge for innovation in the Netherlands South West & Flanders Cluster

Source: Own, data basis online-survey, 2012.

Note: Question on the sources of information or knowledge that is relevant for firm innovation, n = 83.

In the Netherlands South West & Flanders Cluster, business clients, informal contacts and suppliers are the most important sources of knowledge for innovation. 45% of the respondents state they always or very often receive relevant knowledge from business clients, with only 1% indicating they never obtain any information from this source. Competitors and universities are of less importance for the respondents in this context. Only 12% always or very often receive information that is relevant for innovation from these two possible sources and 17% and 20% respectively never do.

5.2 Rhein-Main Region

Overall, the business environment provided by the Rhein-Main Region can be described as very competitive. Principal factors of the excellent positioning of the cluster are its function as an international gateway, grown multi-modal infrastructures and logistical processes and an excellent range of knowledge-intensive services with a logistics reference. The cluster region benefits from its exceptional international accessibility at the heart of Europe. Logistics locally co-develops with other highly developed logistics-related clusters, such as IT, finance, consulting, automation or chemistry and pharmaceuticals. The Rhein-Main Region concentrates these advanced clusters within a 200-kilometre radius, leading to interdisciplinary innovation in close geographic proximity.

The cluster capitalizes on its historically grown economic conditions. Rhein-Main has a long tradition as a market place and as an interface for important European trade routes. Transport and trade flows have always been a vital attribute of the cluster and its economic development.

5.2.1 Evaluation of the Regional Business Environment

The following analysis of the regional business environment will allow a further differentiated perspective on the importance of the cluster for the success of the sector.

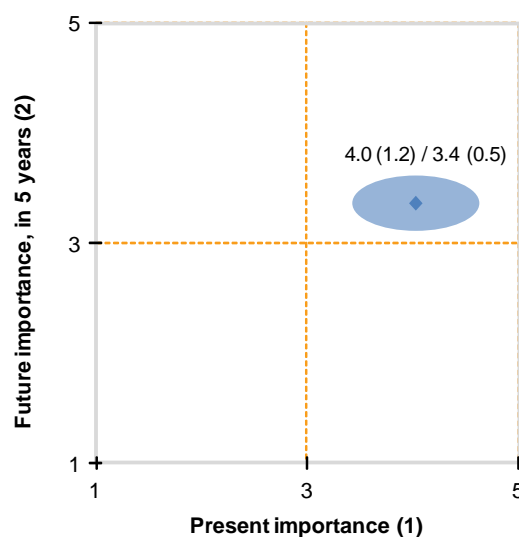


Figure 29 Importance of the Rhein-Main Region for the logistics & logistics-related sector

Source: Own, data basis online-survey, 2012.

Note: 1) Question on the present importance of the region for the logistics & logistics-related sector, scale 1 „unimportant“ to 5 „very important“, n = 57. 2) Question on the importance of the region for the logistics & logistics-related sector in 5 years, scale 1 „unimportant“ to 5 „very important“, n = 57. The data point represents the average evaluation, the circle shows the variance.

Figure 29 shows that respondents to the online-questionnaire, on average, consider the Rhein-Main Region as an important location for the logistics and logistics-related sector, both in the present and the future. Respondents especially rate a high future importance, but agree more alike on the present importance of the cluster for logistics and related disciplines, as can be inferred from the variance. This can also be confirmed by a generally observable trend in the cluster region. According to regional experts from the interviews, the cluster is increasingly associated with logistics, with this sector being gradually more recognized as the “strength of the region” and the backbone of regional economic development.

Factor Conditions

The success of the Rhein-Main Region goes back to its mostly rich stock of advanced factor conditions. Figure 30 gives an overview of how respondents to the online-questionnaire evaluated different items related to the factor input for logistics operations in regional companies. The graph illustrates the average evaluation of the items according to a 5-point Likert scale and the average relevance in percent of answers.

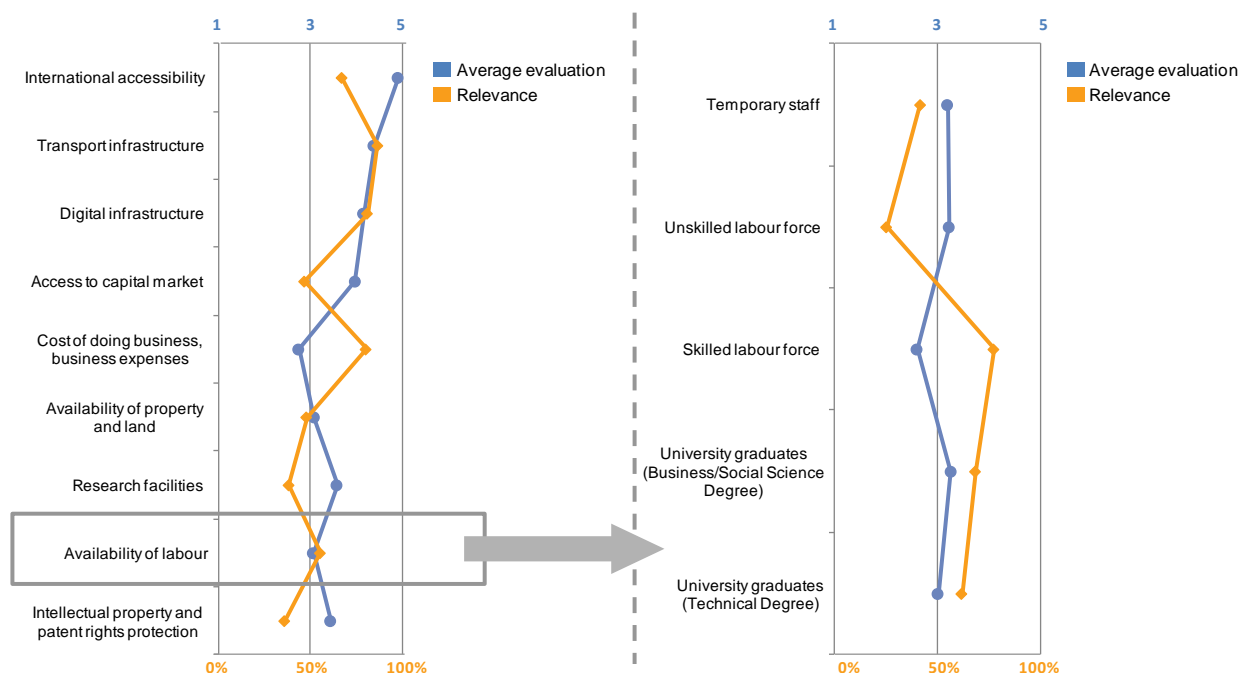


Figure 30 Factor conditions in the Rhein-Main Region

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = very poor or very low, 3 = neutral, 5 = very good or very high, n = 54; 54.

Considering the average evaluation of the infrastructure, Rhein-Main achieves highest scores. The international accessibility, the transport- and digital infrastructure build the competitive advantage of the cluster region: 100% of the respondents assess that the international accessibility of the cluster is very good ("5") or good ("4"). The numbers for transport- and digital infrastructure are 91% and 88% respectively. At the same time, accessibility, transport- and digital infrastructure are all relevant factors for around 67%, 86% and 81% of the responding companies.

Indeed, the cluster enjoys its reputation as being excellent in multimodal and internationally connected infrastructure. The area is linked to all transport modes. It is equipped with the best accessibility in the centre of Germany and Europe, with one of Europe's largest airports in Frankfurt and next to the Frankfurt highway intersection A3/A5 as one of Europe's busiest intersections, with 330,000 cars per day passing the highway junction. With 54 million passengers and an approximate 2 million tons of freight per year, Frankfurt is among the largest airports on the European continent. Frankfurt Main Station with 350,000 passengers per day is another example for Rhein-Main as a leading European transportation hub. In the centre of Germany and Europe, the cluster named after the rivers of Rhein and Main lies at the intersection of European traffic corridors in air- and land- as well as in inland waterway transport (Federal State of Hessen, 2012).

The cluster is additionally host region to the internet node DE-CIX as one of the leading nodes in virtual exchange traffic worldwide, connecting over 450 leading internet providers from more than

52 countries (DE-CIX Management GmbH, 2012). The most recent source indicates that approximately 90% of German data streams and around 35% of the European electronic flows cross this hub (Planungsverband Ballungsraum Frankfurt/ Rhein-Main, 2006). The DE-CIX as one of the three largest digital traffic nodes in the world is especially important for Central and Eastern Europe (Planungsverband Ballungsraum Frankfurt/ Rhein-Main, 2009). What is only perceived as medium with regard to infrastructure aspects is the availability of property and land. Logistics needs real estate and large areas for its operation and distribution centres. Experts from the interviews in the region unanimously agree that there is a scarcity of these factors in the Greater Frankfurt area, given the rapid economic development of the sector in this more and more urban logistics cluster. A master plan for logistics in combination with the improvement of the image and acceptance of the sector could help in the competition for new land, says one expert interviewee from a local public institution based in the cluster.

Focusing on the education landscape and in particular the availability of labour, the results imply a recommendation for action. For all types of labour, from temporary staff and unskilled labour over skilled labour to university graduates, the average evaluation is only medium-scale. Especially the skilled labour is in high demand and requires action. This picture reflects a general trend in logistics. There is a huge labour shortage that needs to be tackled in the future. Experts from the interviews in the region point out that sector-image-improving campaigns or tailored education programs can help to alleviate the problem of not having enough, for example, truck drivers, operative transportation and storage personnel and supply chain management and engineering professionals for the planning and execution of logistics. The argumentation is substantiated through the exemplifying fact that from the year 2012 to 2017, there is roughly an annual lack of about 1,000 skilled labour in the logistics sector within the cluster region; from that, 40% go back to the traditional transport and storage logistics sub-sector (IHK Darmstadt Rhein Main Neckar, 2010). Moreover, especially the knowledge-intensive services in logistics require a high-level of interdisciplinary excellence and international experience. From the above graph, it becomes obvious that university graduates in management and engineering are hereby needed alike in the cluster. Rhein-Main has a diversified education landscape when it comes to study programs or chairs in logistics and related disciplines. There is a variety of universities, such as the Technical University of Darmstadt with a focus on logistics and material flows, integrated traffic systems and mechanical engineering or the FH Frankfurt with a logistics chair in combination with aviation management, just to name a few of a long list. Tailored further education institutes for logistics are also part of the regional education landscape and complement the primary education with secondary (certificate) programs.

Concerning the capital market accessibility, respondents attest a high average evaluation to the Rhein-Main Region, with approximately a “4” on a Likert scale. 72% of the respondents rate the capital market accessibility to be very good or good. Capital is accessible through the very strong finance cluster in geographic proximity. Frankfurt is host city to the European Central Bank and is one of Europe’s largest financial and insurance centres. The most important banks worldwide are present at the location. Contrary to the quality of the capital market accessibility, the cost of doing business is too high. This item is evaluated as medium to low but is considered as highly relevant. Generally, the cost of doing business might be difficult to avoid. The increasing urbanisation and economic development let prices inevitably soar to a less influenceable extent.

The evaluation of research facilities in the Rhein-Main Region ranks with an average of 3.6 in the medium to high range. 54% of the respondents think that research infrastructures in the area are good or very good. Rhein-Main bundles various research institutes with competences in applied logistics. Examples are the “Fraunhofer Institut für Materialfluss und Logistik” (Fraunhofer institute for material flows and logistics) with a project centre dealing with air cargo logistics at Frankfurt

Airport or laboratories for logistics and conveyor technologies at regional universities. There are more than 20 institutions in the cluster that work on logistics in the broader sense (IHK Darmstadt Rhein Main Neckar, 2010). Further pillars of applied research are the important logistics-related research and development centres run by the large automotive suppliers in the cluster or the abundant research departments within the companies of the regional industrial core. Altogether, Rhein-Main is a location for advanced knowledge-intensive value-added logistics services. Basic research in logistics is driven by the above-mentioned broad university landscape in logistics and logistics-related disciplines. Amidst this research infrastructure, the House of Logistics and Mobility (HOLM) has been created as a blueprint for an innovative knowledge infrastructure in the topic and as a new Institution for Collaboration to bring together, among others, companies and research institutions for logistics research.

Finally, the Rhein-Main Region benefits from logistics being seen as the strength of the region, as an economic and employment driver along with an advanced industrial basis in other clusters. Yet, the image of the sector is still at the beginning of improvement. For the public or young professionals, as often in other (European) regions, logistics is still a burden for the environment and urban development (e.g. congestion) or not attractive enough as an employer. With this challenge in mind, a recommendation for action becomes obvious for the regional cluster and for the trans-regional cooperation between clusters in Europe.

Demand Conditions

According to the evaluation of the demand conditions by the respondents in Figure 31, the Rhein-Main Region is a promising market for logistics. The individual factors are also deemed relevant for the success of the responding companies, implying competitive advantage.

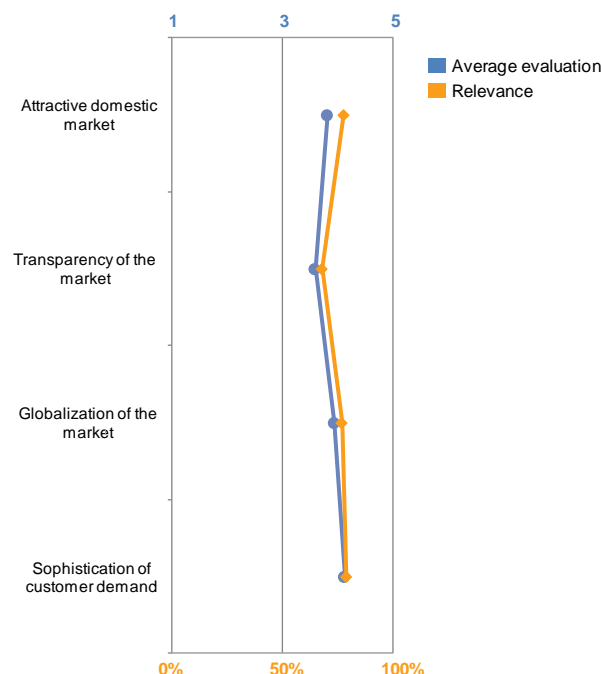


Figure 31 Demand conditions in the Rhein-Main Region

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = fully disagree, 3 = neutral, 5 = fully agree, n = 55.

The Rhein-Main Region is considered as an attractive (regional) market for the logistics and logistics-related sector, a rounded average of 3.8 on the Likert scale is the result for this item in the online-survey. 72% of the respondents from the cluster agree that the market is very attractive or attractive. Rhein-Main has a strong, concentrated industrial core comprising diverse but related industry clusters demanding logistics. The industrial basis is not only formed by larger companies but also SMEs, particularly in the traditional transport and storage sector. Regional logistics companies are in more than 50% of the cases involved in intra-regional trade and thus ignite regional market development (IHK Darmstadt Rhein Main Neckar, 2010). The cluster region is the market for advanced knowledge-intensive logistics services in Germany. The airport is the hub where especially valuable semi-finished and finished goods are shipped globally and are connected to the multimodal industrial routes of the cluster. Rhein-Main as one of Germany's most vital economic drivers enjoys a high purchasing power of consumers and the industry alike. The cluster has access to 35 million consumers in its catchment area of a 200 km radius and is close to approximately 500 million consumers in Europe, increasing with the expansion of the European Union. It is estimated for the Federal State of Hessen as a large part of the cluster market that more than 10% of the registered transported goods in Germany (in tonnage) use Hessian infrastructure (ivm GmbH, 2010). According to projections in Hessen as a proxy indication, passenger traffic is likely to increase by 20 percent between 2004 and 2025, while an even sharper increase of 71 percent is likely to occur in freight transportation (Federal State of Hessen, 2012). The cluster will presumably bear the largest share of these promising economic developments.

Respondents attest a medium to high market transparency to the Rhein-Main Region with an average of 3.6. Nearly 60% of the survey participants in the cluster assess the market transparency to be very high or high. Knowledge about market trends seems to rapidly diffuse through the close geographic proximity and the predominant intra-regional trade between locally settled companies.

Despite this intense economic exchange within the regional industry core, the market for logistics in the area shows a high degree of globalisation, as can be inferred from Figure 31. Economic interdependencies increase with Europe as one market place, the focus on core competencies and technology development worldwide. Logistics, as a global industry, spans across country borders and regional producing companies increasingly rely on international cooperation in their down- and up-stream supply chain operations. Germany is also one of the world's largest export nations, forcing Germany's logistics hubs, such as Rhein-Main, into developing and retaining competent trade logistics. 14 of the Top 100 logistics companies worldwide are present in the State of Hessen as the point of reference for large parts of the cluster here (Federal State of Hessen, 2012). Frankfurt airport with its predominant connections to international trade is a major hub in global logistics operations.

Customers in the cluster drive the regional innovation climate with a sophisticated demand. The quality of customer demand, e.g. the standards and the anticipations customers set with regard to innovative logistics products and services, is rated with an average of 4.1 on the Likert scale. 78% of the respondents agree on a very high or high sophistication of customer demand.

A look at the market attractiveness- and growth-matrix for the Rhein-Main Region in Figure 32 confirms the positive picture that has been presented for the logistics market in the cluster. With an average of 3.7 and 3.8, the market attractiveness and the growth potentials of the logistics and logistics-related sector respectively are ranked rather high. The variances indicate that there is a slight discrepancy between the answers of the respondents, more with regard to the current market attractiveness than the future growth potential.

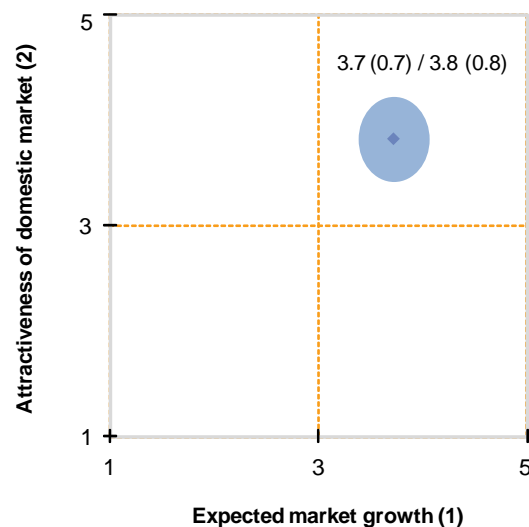


Figure 32 Market-attractiveness-growth matrix of the Rhein-Main Region

Source: Own, data basis online-survey, 2012.

Note: 1) Question on the expected market growth of the logistics & logistics-related sector in the next 2-3 years, scale 1 „strong market shrinkage“ to 5 „strong market growth“, n = 44. 2) Question on the current market attractiveness of the logistics & logistics-related sector, e.g. rentability, scale 1 „very unattractive“ to 5 „very attractive“, n = 55. The data point represents the average evaluation, the circle shows the variance.

Indeed, goods haulage will have increased in Hessen as an approximate reference for the cluster by 2030 on a yearly average of 1.3% (from 2010 on), that is, from 481 million tons to 643 million tons; a similar yearly growth rate of 1.8% is true for the through-traffic, doubling from 167 million tons in 2010 to 256 million tons in 2030 (ivm GmbH, 2010). The cluster will be significant in supporting this economic development.

Context for Firm Strategy, Structure and Rivalry

Figure 33 presents the context in which firms are created and managed as well as the nature of domestic rivalry. Most importantly, there is an intense competition in the region and respondents see the improvement in the image of the sector as a future field of action.

The innovation climate is rated medium to high and is considered relevant for the success of the respondent companies. Rhein-Main starts from a good competitive basis with regard to this item and should further strengthen its competence factor of knowledge-intensive logistics services in future. Discussing future recommendations for action, the image of the sector is one of the most evident points to start with. An average evaluation of 3.3 but a relevance of 76% implies the need for action. The improvement of the acceptance of the logistics sector might help to counteract the problem of labour scarcity and the public concern about the environmental impact of the sector. A further field of action seems to be the trustworthiness of cooperation. Cooperation partners might often be reserved, but a new era of cooperation culture in the cluster needs to prove to the actors the advantages of mutual synergies in joint activities and projects.

Similar to the innovation climate, the professionalism of the overall business conduct is considered to be of a high standard, as is the dynamism in new business foundation (e.g. the intervals of market entry and the quality of start-ups). The latter is a typical characteristic of a successful cluster, with cluster presence driving the creation of new businesses. Not less important is the high competition in the logistics cluster. The corresponding survey item indicates an average evaluation of approximately 4.0 and is deemed relevant by 82% of the respondents. Competition leads to

innovation in logistics and the respondents agree on the need of having rivalry. Rhein-Main is known for its atomic logistics company landscape. There are many SMEs specializing in freight forwarding and integrated logistics solutions and, as outlined above, the larger international logistics companies from the list of the Top 100 logistics firms are also present locally.

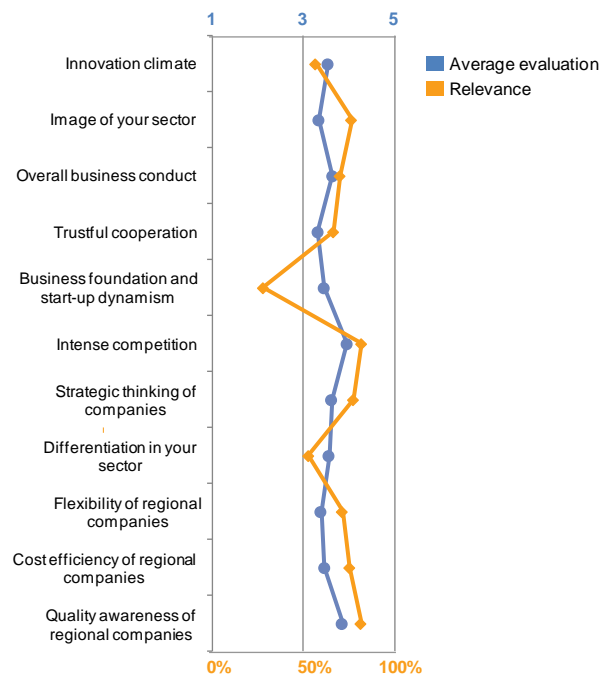


Figure 33 Context for firm strategy, structure and rivalry in the Rhein-Main Region

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = fully disagree or very poor, 3 = neutral, 5 = fully agree or very good, n = 54.

Following the estimation of the participants in the online-survey, the business sophistication of companies is rather high. Companies are adept at strategic thinking, at offering differentiated and unique products and services and at delivering quality as entrenched in their firm philosophy. Their cost efficiency and flexibility with challenges and changes is slightly inferior. With above 50%, all shown components of the business sophistication of companies are considered relevant.

Networking and support structure

The public support structure in general is evaluated as medium to high. An improved public support with the creation of sector-specific initiatives is seen as a potential field of action by the respondents. Support with the foundation of new businesses (average 3.2 and 31% of respondents indicating very good or good) and with research and development activities (3.3; 38%) is evaluated slightly inferior to support with knowledge and technology transfer (3.5; 54%) and with export promotion and international market access of companies (3.4; 49%). The provision of public financing achieves only a medium rating (2.9; 17%). Surprisingly, only 55% think this item is relevant for the success of their company.

Focusing on support with the organization of sector-specific events and with the creation of sector-specific initiatives and networks, respondents are pleased with the developments in the cluster. Both items achieved an average evaluation score of around 3.5 and respondents are very satisfied or satisfied in 54% and 57% of the cases respectively. The relevance of support with the creation of sector-specific initiatives and networks is the highest in the analysis of Figure 34. This is also in line with the opinions from the expert interviews: Logistics actors need opportunities to exchange

knowledge, information and ideas and this can obviously be best achieved in initiatives tailored to sector requirements. This could also be the reason why around 40 cluster initiatives enrich the network landscape in Hessen, from which around 30 have a direct or indirect logistics reference (HA Hessen Agentur GmbH, 2012). Many of these cluster initiatives lie within or at the geographic periphery of the cluster and provide the platforms to exchange and co-develop.

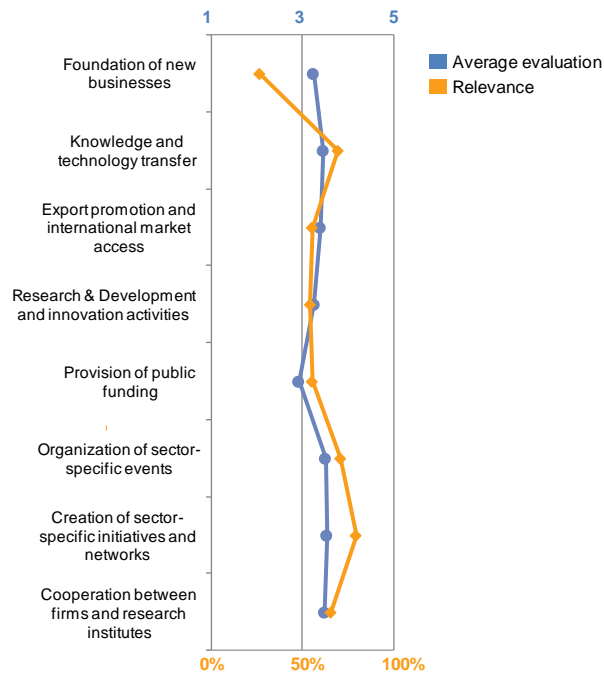


Figure 34 Networking and support structure in the Rhein-Main Region

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = very dissatisfied or very poor, 3 = not applicable or neutral, 5 = very satisfied or very good, n = 52.

Coming to an important point with regard to the networking structure, the quality of the cooperation between firms and research institutes is given an average rating of 3.5. Approximately 51% of the respondents indicate that this type of cooperation is very good or good within the cluster; 66% think this item is relevant for firm success. The cooperation between science and industry is seen more and more as vital in developing innovative logistics solutions: In order to further develop the knowledge-intensive logistics services, Rhein-Main relies on a variety of logistics-related cluster initiatives, such as “Logistik RheinMain. The Knowledge Initiative” and one major Institution for Collaboration: the “House of Logistics and Mobility (HOLM)”.

HOLM is a neutral platform for interdisciplinary and applications-oriented project work, research as well as training and advanced instruction relating to logistics, mobility and associated disciplines. HOLM brings together different specialist fields of expertise under a single roof and its work is driven by intense collaboration between the worlds of business, politics and society. At the Gateway Gardens complex at Frankfurt's Rhein-Main Airport, the HOLM building will open in 2013, providing up to 20,000 square meters of space as the interdisciplinary platform for research, training and networking. Here, colleges, companies and other institutions will be able to look into outstanding know-how and forge new alliances.

Logistik RheinMain is the logistics cluster initiative settled at HOLM. It is the first initiative in the cluster with the objective to further position the Rhein-Main Region as a global logistics location and as a leading centre for logistics knowledge by networking the local triple-helix.

5.2.2 Networking and Cooperation Intensities

Figure 35 shows that the five cluster core industries have a high intensity of networking within their respective sector and that there are strong ties between the industries in the regional core. Weak intensities can be detected between land and air transport, land transport and postal and courier activities, air and water transport and between water transport and postal and courier activities. Regarding the cluster periphery, the cluster core together is only averagely connected to the sectors of the maintenance/repair/overhaul of transport equipment, the ICT and the wholesale and retail trade sector. Cooperation with the remaining industries is of weak intensity.

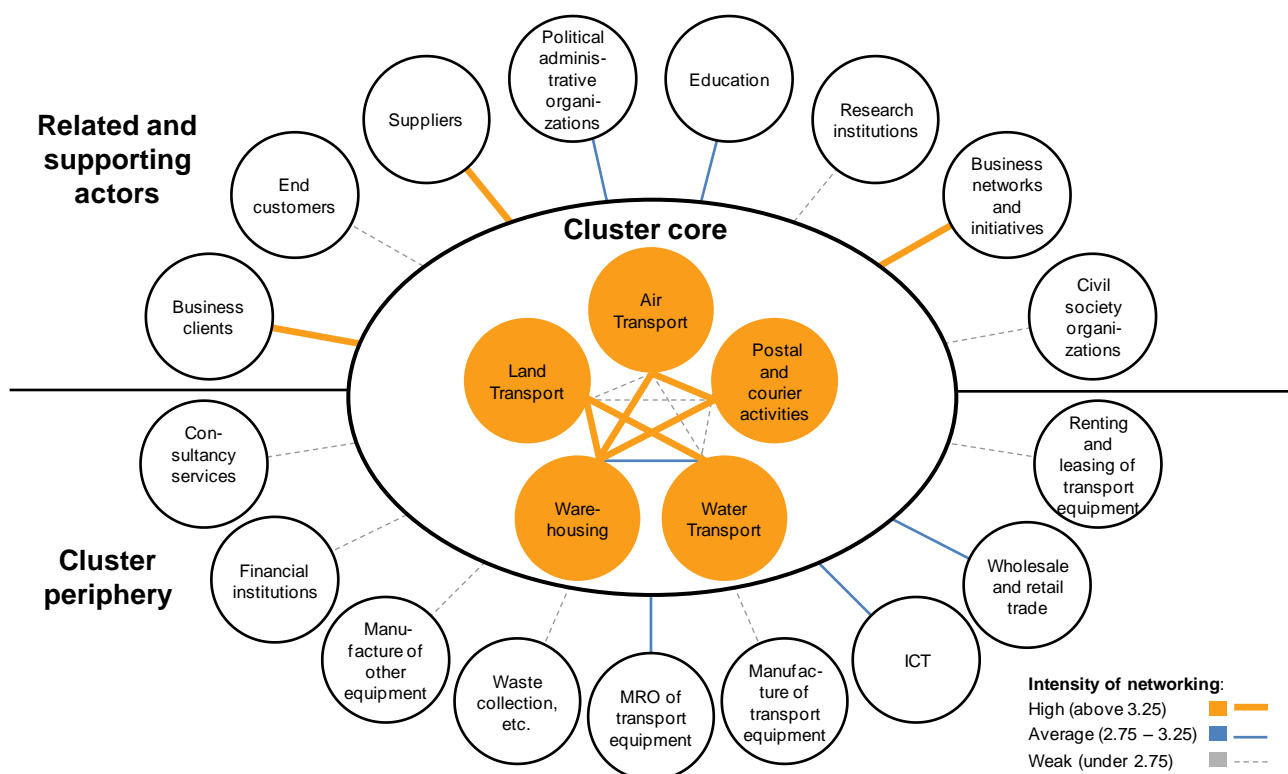


Figure 35 Cooperation intensity in the Rhein-Main Region

Source: Own, data basis online-survey, 2012.

Note: Based on the average evaluation of the cooperation intensity with respective cooperation partners, scale 1 = no cooperation to 5 = very intensive cooperation, number of ties = 1040.

Concerning the related and supporting actors, the cluster core industries have intense relations to business clients and suppliers as well as to business networks and initiatives. They also work together with political administrative organizations and the educational sector; however, these relations are of average intensity only.

Figure 36 gives an overview of the relations of the regional cluster core and European partners. The cluster core in the Rhein-Main Region has intense network connections to business clients on a European level and with an average intensity to European cluster core industries.

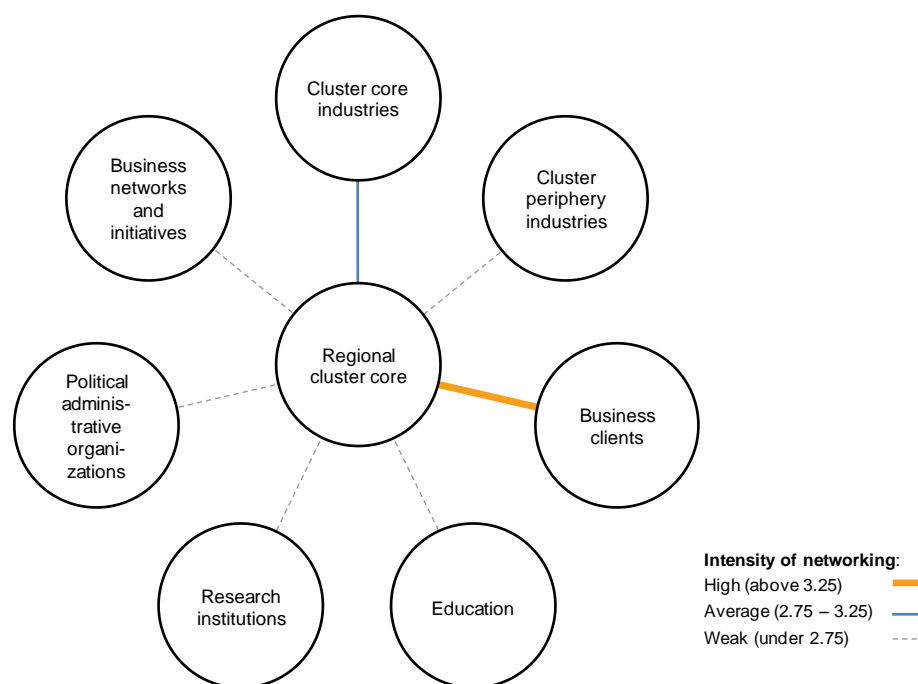


Figure 36 Cooperation intensity of the regional cluster core with Europe

Source: Own, data basis online-survey, 2012.

Note: Based on the average evaluation of the cooperation intensity with respective cooperation partners, scale 1 = no cooperation to 5 = very intensive cooperation, number of ties = 717.

The cooperation intensity of the regional cluster core with partners from European business networks and initiatives, scientific and educational institutions and political administrative organizations is predominantly weak.

5.2.3 Specific Context for Innovation

Increasing the range of products, services or processes is an important driver for innovation for 90% of the respondents (Figure 37). Almost as many respondents assess the improvement of the quality of products, services and processes as their main driver.

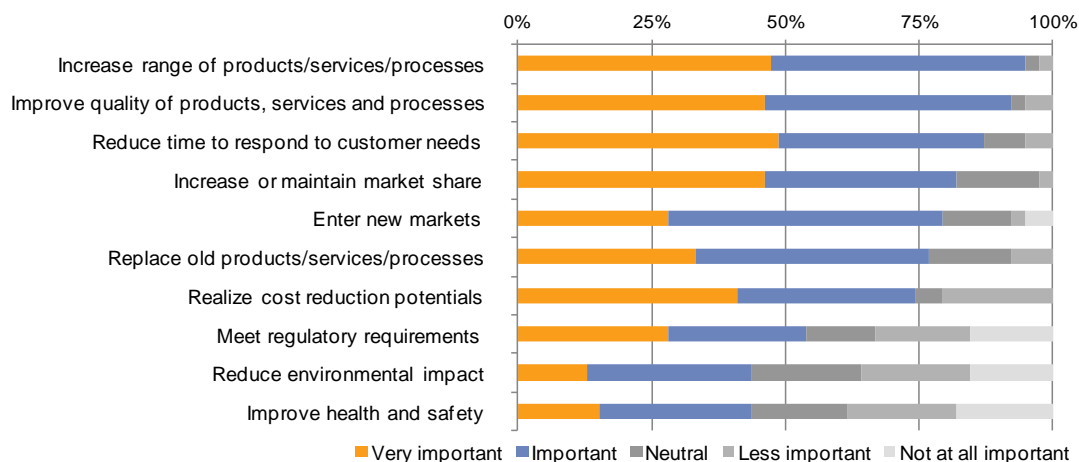


Figure 37 Drivers of innovation for companies in the Rhein-Main Region

Source: Own, data basis online-survey, 2012.

Note: Question on important drivers for firm innovation, n = 39.

Reducing the environmental impact and improving health and safety are rated as the least important reasons for innovation activities, yet almost 45% of respondents evaluate these factors as very important or important.

According to Figure 38, the missing or uncertain customer demand and the cost of innovation are the largest barriers to investing in logistics innovation in the Rhein-Main Region. 43% and 36% of the respondents respectively assess these factors as obstacles in their company.

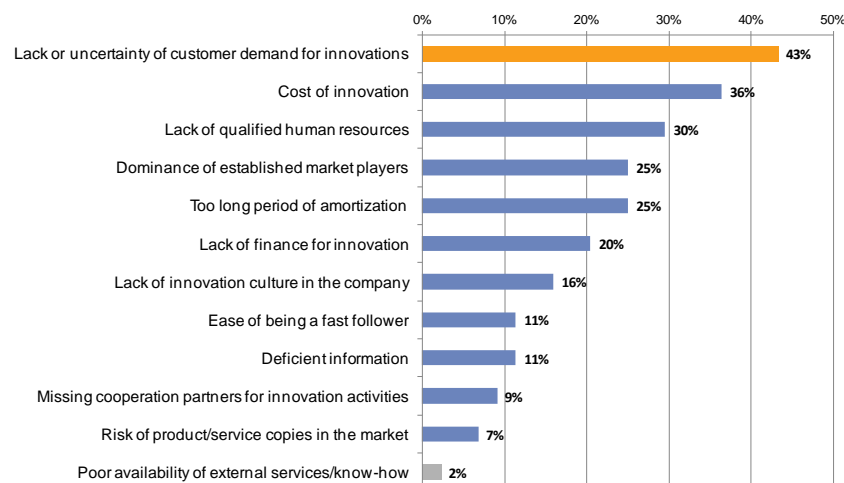


Figure 38 Barriers for innovation in companies in the Rhein-Main Region

Source: Own, data basis online-survey, 2012.

Note: Question on largest barriers for firm innovation, n = 44 (max. 3 selections possible).

Poor availability of external services or know-how is assessed as a barrier for innovation by only 2% of the respondents. The risk of product or service copies in the market and missing cooperation partners are perceived as smaller barriers as well.

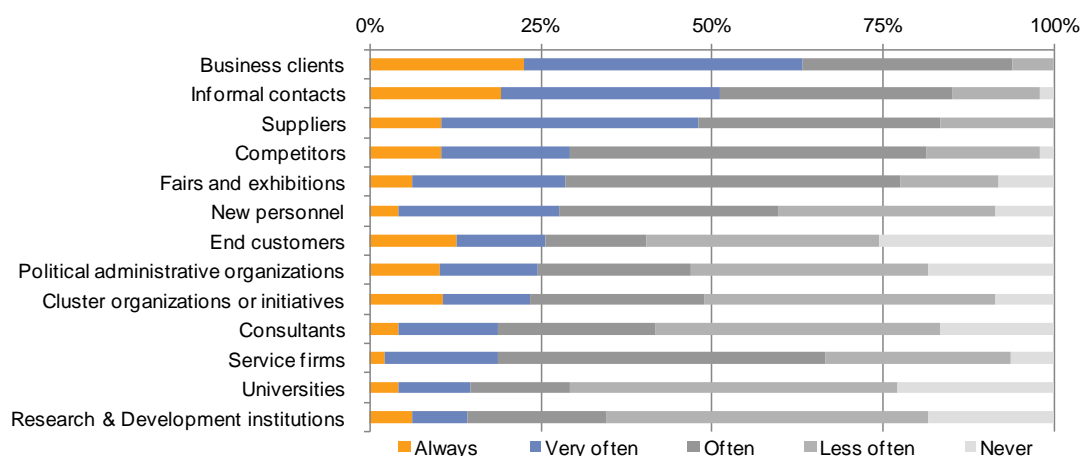


Figure 39 Sources of knowledge for innovation in the Rhein-Main Region

Source: Own, data basis online-survey, 2012.

Note: Question on the sources of information or knowledge that is relevant for firm innovation, n = 48.

In the online-questionnaire, respondents were asked to indicate how often they receive knowledge from different sources which is relevant for innovation. Figure 39 gives an overview of selected sources and the frequency of knowledge transfer between these and the responding firms in the

region. The order is given according to the accumulation of the categories “Always” and “Very often”. Business clients are the most important source of knowledge for innovation in the Rhein-Main Region. Almost 25% indicate they always receive information and 40% state they do so very often. Informal contacts and suppliers follow on the second and third rank, whereas universities and R&D institutions rank last. 23% of respondents state they never receive relevant information from universities and 18% do likewise for R&D institutions.

5.3 Region of Aragón

Aragón is located at the convergence of transportation routes that link the economically vibrant regions of Spain and South-West Europe. There is a strong logistics tradition and the geostrategic location is reinforced further by significant investments in transportation and communications infrastructure. In the past years, the regional government has been encouraging logistics activities, as it has identified this sector as an important driver of the competitiveness of the region.

5.3.1 Evaluation of the Regional Business Environment

Figure 40 shows the significance of the regional cluster for logistics. Respondents assess a high importance of the region for the logistics and logistics-related sector, both at present and in the future. Nonetheless, the importance of the region for the sectors in five years is believed to be slightly lower than today.

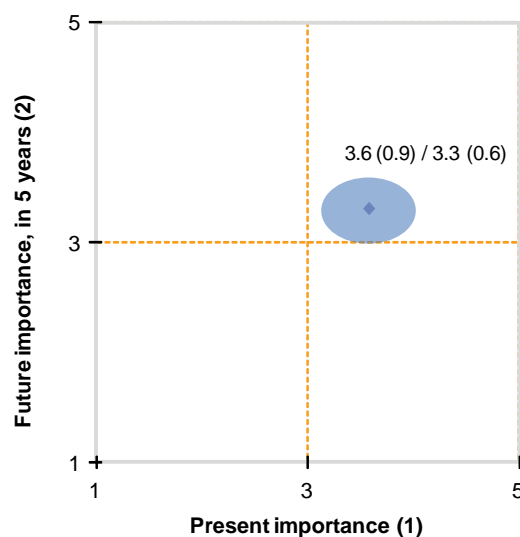


Figure 40 Importance of the Region of Aragón for the logistics & logistics-related sector

Source: Own, data basis online-survey, 2012.

Note: 1) Question on the present importance of the region for the logistics & logistics-related sector, scale 1 „unimportant“ to 5 „very important“, n = 44. 2) Question on the importance of the region for the logistics & logistics-related sector in 5 years, scale 1 „unimportant“ to 5 „very important“, n = 44. The data point represents the average evaluation, the circle shows the variance.

The following analysis of the regional business environment using the Porter Diamond Model will allow a further differentiated perspective on the importance of the cluster for logistics.

Factor conditions

Figure 41 gives an overview of how respondents to the online-questionnaire evaluated different items related to the factor input for logistics operations in regional companies. The graph illustrates the average evaluation of the items according to a 5-point Likert scale and the average relevance in percent of answers.

50% of the respondents to the online-questionnaire evaluate the international accessibility of the Region of Aragón as good or very good. Interviewees stress the advantageous location of the region within Spain. It constitutes a key asset in South-West Europe, being the geographical centre of the hexagon formed by Madrid, Valencia, Barcelona, Toulouse, Bordeaux and Bilbao and an important logistics articulation with the Spanish hinterland. Concerning rail passenger transport, the

AVE high speed train stops in Zaragoza on the routes between Madrid-Barcelona, Barcelona-Málaga, Barcelona-Sevilla and Madrid-Huesca, which allows short travel times between Aragón and the two major Spanish cities (IDiA, n.d.; Val, Royo, Chocarro, Bordetas, & Artigot, 2010).

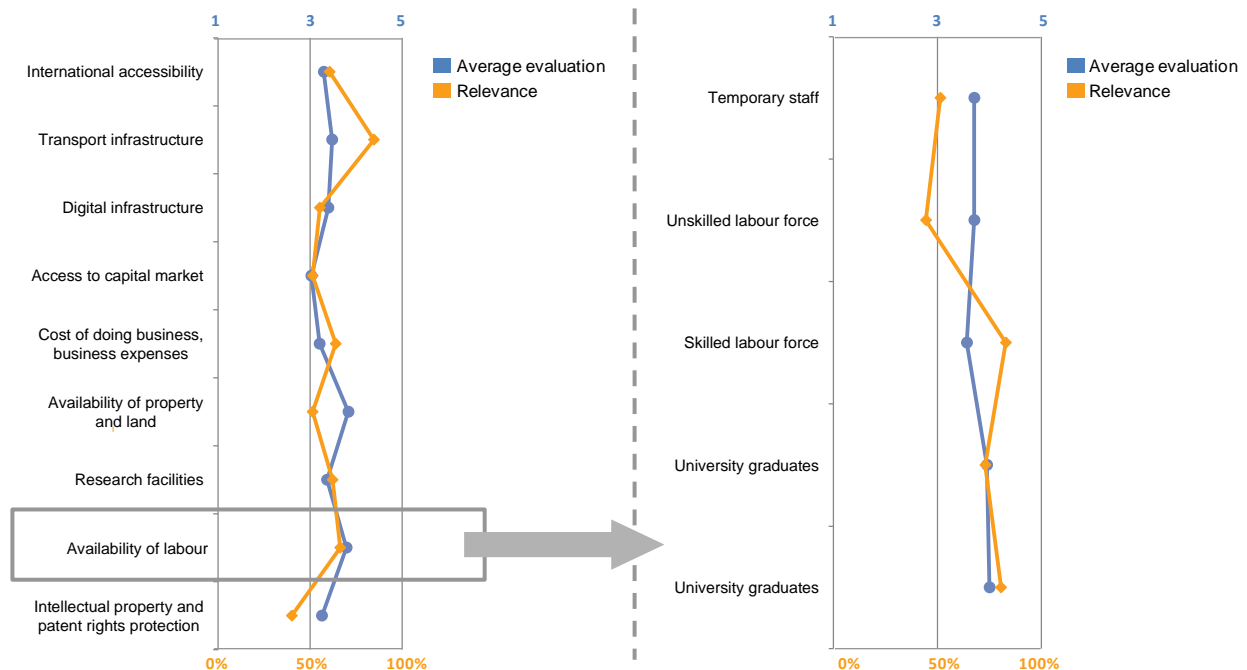


Figure 41 Factor conditions in the Region of Aragón

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = very poor or very low, 3 = neutral, 5 = very good or very high, n = 41; 41.

Zaragoza as the capital of the cluster region is well connected by road to the national and European networks across the Ebro axis, to the Mediterranean and Atlantic motorways and through the Somport central pass to the next phase of the North-South axis (Val et al., 2010). However, interviewees mention that the access to Europe is to be improved as well as the connection to ports. This need is partially addressed by the plan to build a rail corridor through the Central Pyrenees, which would cross Aragón and connect the ports of Algeciras in the South of Spain and the port of Sines in the South East of Portugal with the centre of Europe. The corridor has been included in the comprehensive Trans-European transport network (TEN-T), although it will not be realised until 2030 (Nilsson, 2012). When it comes to accessibility by air, there are three airports in the region - Zaragoza airport as well as Huesca and Teruel airport - the latter are mainly used for commercial and aeronautical activities (Val et al., 2010).

The transport infrastructure is evaluated positively by more than 60% of the respondents (good or very good) and estimated as highly relevant for the company's success. The Logistics Platform of Zaragoza (PLAZA), the largest intermodal logistics platform in Europe, is located in Aragón and provides for intermodal connections between air, road and rail in the cluster region (Barcelona-Catalunya Centre Logístic, 2010; Bordejé, 2011; Plataforma Logística, S.L., n.d.; Plataforma Logístico-Industrial de Teruel, n.d.; PLAZA, S.A., n.d.). PLAZA is connected to highways, has its own railway zone as well as a direct entrance to the airport as a continuation of PLAZA. In addition, it is one dry port of several ports of the Iberian Peninsula with which it has signed cooperation agreements. There are various other logistics platforms and centres in the Region of Aragón, e.g. in Teruel (PLATEA), Fraga (PLFRAGA) or in Huesca (PLHUS). According to interview experts, the possibility to combine air freight transport and passenger flights would be of economic advantage

for the companies but until now, there are low belly-load capacities due to a limited number of passengers at Zaragoza airport.

Only one respondent out of ten evaluates the digital infrastructure as poor; Aragón enjoys a favourable IT infrastructure. When it comes to the accessibility of the capital market, only 18% agree that it is well accessible in the Region of Aragón. Interview partners stress that funding, especially for innovation activities, is difficult.

Business expenses and the protection of intellectual property and patent rights both receive a medium evaluation, whereas the availability of property and land is rated good or very good by almost 80% of the respondents. More than 3,000 ha of land are dedicated to logistics in the Region of Aragón, of which 1,700 ha are for intermodal logistics platforms (Barcelona-Catalunya Centre Logistic, 2010). Interview partners also rate this factor positively.

Almost 50% of the respondents consider research facilities as good or very good. There are about 3,000 researchers and 260 official multidisciplinary research groups in Aragón. Important research facilities concerning logistics include, for example, the University of Zaragoza with its Transportation and Logistics Research Group (GITEL), the Zaragoza Logistics Center (ZLC) which is linked to the University of Zaragoza and the Aragón Technology Institute (ITA) (Beltrán Blázquez, n.d.). Interview partners from companies mention their satisfying experience with regional research institutions and highlight the importance of applied research.

When it comes to the availability of labour, all types of labour are evaluated positively. Especially skilled labour is seen as relevant for the company's success, unskilled labour and temporary staffs rank last in terms of relevance. Unfortunately, the fact that wages in the transport sector are below national average could become a barrier for attracting new personnel. Aside from the above-mentioned research facilities, there are several institutions, such as professional training institutes or business schools, that offer education in logistics and transport (Val et al., 2010). Giving some examples, ZLC offers different programs, e.g. a national Master in Logistics (MdL), the international MIT-Zaragoza Master in Logistics and Supply Chain Management (ZLOG), the MIT-Zaragoza PhD in Logistics and Supply Chain Management and executive education programs. In general, it is true that there is a wide variety of courses and seminars, workshops, conferences and summits related to the areas of logistics, transport and supply chain management in the Region of Aragón (García Mainar & Montuenga Gómez, 2010; Val et al., 2010; Zaragoza Logistics Center, n.d.).

Demand conditions

An overview of the respondents' perception of the demand conditions in the cluster region is given in Figure 42. All factors are of high relevance to the respondents. Almost 40% of the respondents agree that the Region of Aragón has an attractive domestic market, whereas 32% disagree. In line with this ambiguous evaluation, interviewees point out that there is no strong manufacturing base in the cluster region, which leads to a lack of products that need to be shipped, but also stress that a principal strength of Aragón is that there are 20 million inhabitants within a 300 km radius. Four of the most important Spanish cities (Madrid, Barcelona, Valencia and Bilbao) are located within its closest catchment area. Besides, Aragón is one of the Spanish regions with the highest purchasing power, with a per-capita income of 25,361€ in 2007, 8.4% higher than the Spanish average and 2.6% above the EU-27 average (Aragón Exterior, n.d.; IDiA, n.d.).

The transparency of the market in the region and the sophistication of customer demand are evaluated similarly and are deemed as relevant for company success by more than 70% of the respondents. The globalization of the market in the Region of Aragón is estimated to be very high.

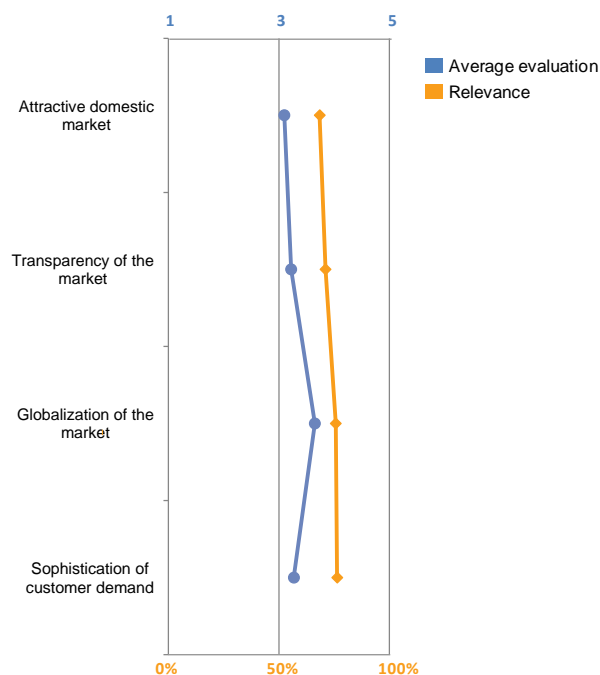


Figure 42 Demand conditions in the Region of Aragón

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = fully disagree, 3 = neutral, 5 = fully agree, n = 41.

Figure 43 shows the evaluation of the present market attractiveness of the sector and the expected market growth in the upcoming 2-3 years. Respondents attest a medium to high market attractiveness, e.g. rentability, and a high future growth in logistics to the Region of Aragón.

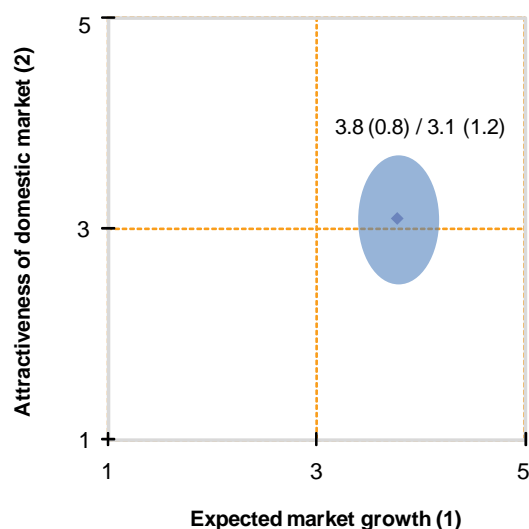


Figure 43 Market-attractiveness-growth matrix of the Region of Aragón

Source: Own, data basis online-survey, 2012.

Note: 1) Question on the expected market growth of the logistics & logistics-related sector in the next 2-3 years, scale 1 „strong market shrinkage“ to 5 „strong market growth“, n = 37. 2) Question on the current market attractiveness of the logistics & logistics-related sector, e.g. rentability, scale 1 „very unattractive“ to 5 „very attractive“, n = 41. The data point represents the average evaluation, the circle shows the variance.

Context for firm strategy, structure and rivalry

Figure 44 gives an overview of the factors associated with firm strategy, firm behaviour and rivalry in the cluster region. Several of these are deemed to be very relevant by the respondents of the online-questionnaire.

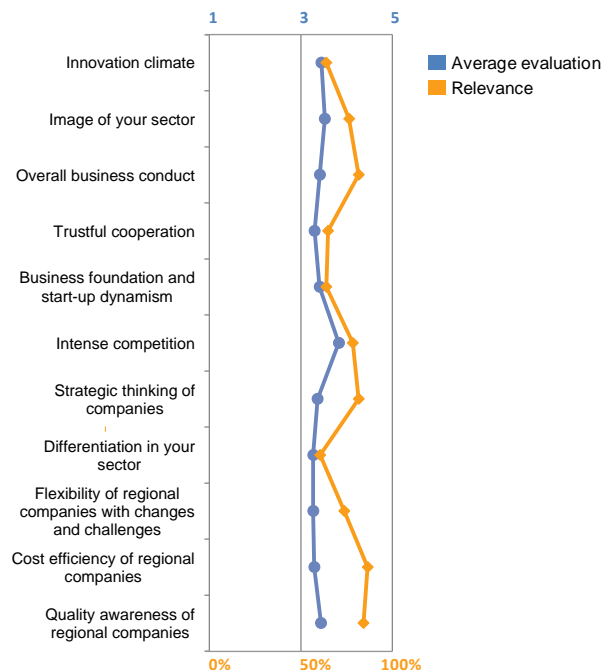


Figure 44 Context for firm strategy, structure and rivalry in the Region of Aragón

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = fully disagree or very poor, 3 = neutral, 5 = fully agree or very good, n = 41.

Currently, almost 60% of the respondents assess the innovation climate in the Region of Aragón as good or very good. Regarding the number of registered patents, the region ranks second in Spain. The Government of Aragón wishes to foster further improvements through its regional innovation strategy “InnovAragón”, which aims at converting Aragón into Spain's leading region in the area of product innovation (Aragón Exterior, n.d.; Bordejé, 2011).

More than half of the respondents evaluate the image of the sector as good or very good. The overall business conduct has a similar assessment and is estimated to be relevant for the company's success by more than 80%. This implies an opportunity for improvement of the logistics sector in the cluster region. 45% evaluate the trustful cooperation in Aragón as good or very good and 38% of the respondents agree or fully agree that there is regional start-up dynamism.

Two out of three respondents agree or fully agree that the logistics sector in the Region of Aragón is characterized by an intense competition. There is excess capacity in almost every industry, further driving competition, as well as a strong competition from emerging markets. In addition, and due to the financial crisis, the access to capital is a problem and companies are also rivals in this perspective (Gobierno de Aragón, 2012).

Strategic thinking, flexibility, cost efficiency and quality awareness of regional companies are assessed very similarly and seem to be a highly relevant factor for the company's success. Likewise, the differentiation in the sector is rated with an average evaluation of 3.3. Overall, the industry structure in the cluster region is marked by a strong dependence on SMEs, since more

than 50% of the companies that are located in Aragón do not have any wage earners. This also applies to the regional transportation sector, where more than 50% are self-employed and about 40% of the companies have less than 9 employees. This demonstrates an atomic industry structure with a prevalence of micro-companies (FUNDEAR, 2010; Val et al., 2010).

Networking and support structure

The networking and support structure is perceived to be slightly inferior to the other dimensions of the regional business environment. In general, Aragón has put an emphasis on creating a network of collaborations with the objective to build an interregional communication channel. Collaborative links between companies and other stakeholders in the form of clusters for open innovation have therefore been promoted by the Regional Government of Aragón in order to boost the global competitiveness. Examples for cluster networks operating in the cluster region are ALIA, IDiA or CAAR (Bordejé, 2011; CAAR, n.d.; IDiA, n.d.). There are several other regional actors dealing with R&D and innovation activities, but as one interviewee points out, the diversity of authorities and institutions actively involved sometimes leads to the problem of who should be contacted to address specific issues. When it comes to bureaucracy, some experts mention the need to improve the coordination between public administrations in order to ensure a coherent legal framework and facilitate the paperwork.

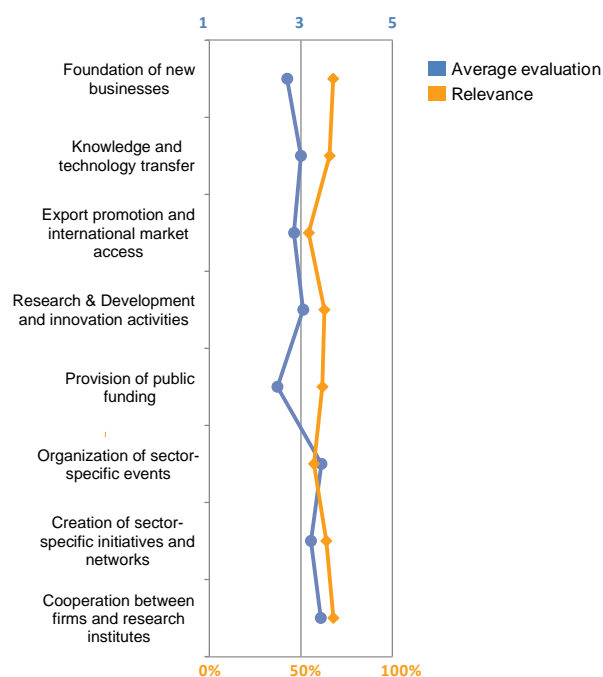


Figure 45 Networking and support structure in the Region of Aragón

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = very dissatisfied or very poor, 3 = not applicable or neutral, 5 = very satisfied or very good, n = 40.

Only 20% are satisfied with the support for the establishment of new businesses. When it comes to the provision of public funding in general, only 8% are satisfied with the support, whereas almost 50% are dissatisfied or very dissatisfied. Although there is assistance and funding opportunities (e.g. through Savia, Avalia, Sodiar who fund the creation of new business), respondents assess the support with public funding in general as a potential future field for action (Aragón Exterior, n.d.).

A couple of interviewees point out that public funding decreased as a consequence of the financial crisis and that this lack of funding constitutes a barrier for innovation of companies in the cluster region.

Regarding knowledge and technology transfer, respondents assess the support very differently. Almost one third is very satisfied or satisfied, whereas one third is dissatisfied or very dissatisfied, the average evaluation being 3.0. There are eight Knowledge Transfer Offices located in the cluster region; they constitute a link between the universities, the R+D centres and the industrial community in terms of the exchange of knowledge, which includes know-how, skills and expertise for both commercial and non-commercial applications (Zaragoza Logistics Center, n.d.).

Export promotion and support with international market access is assessed as the least relevant factor among the networking and support structure, the average evaluation being 2.9. One example for the support of internationalization activities is Aragón Exterior (AREX), a public body offering personalized services, such as consultancy on legal questions or assistance in setting up sales operations abroad etc. to Aragóne companies (Aragón Exterior, n.d.).

The support for R&D and innovation activities is considered relevant by almost two thirds of the respondents, 35% are satisfied or very satisfied with it. In Aragón, the regional innovation policy is designed and delivered by the Government of Aragón and there are several departments involved in the design and implementation of regional policies dedicated to R&D and innovation (Department of Industry and Innovation, Department of Education, University, Culture, and Sports, Department of Economy and Employment, Foundation ARAID). In addition, several relevant regional and national policy documents highlight the importance of innovation activities for the national and regional development. National and regional funding programmes foster the implementation of these guidelines. Examples are ARAID Technological Check, INNOEMPRESA, INNPACTO, and INNPRONTA (Aragón Exterior, n.d.; Beltrán Blázquez, n.d.).

Support with the organization of sector-specific events is evaluated positively by the respondents of the online-survey, whereas support with the creation of sector-specific networks and initiatives is assessed slightly inferior. 44% of the respondents are satisfied or very satisfied with these two factors.

Interviewees mention ALIA as a successful example of a cluster initiative, which also fosters the cooperation between companies and research institutions. This type of collaboration is assessed as relevant by two thirds of the respondents; the average evaluation is 3.2. Interviewees also mention their positive experiences when cooperating with research centres in the cluster region.

5.3.2 Networking and Cooperation Intensities

Figure 46 shows the intensity of networking among different sectors and stakeholders in the Region of Aragón. There is a high intensity of networking within the industries of land transport and postal and courier activities. Warehousing and water transport show an average intensity of networking inside their industry sectors. The air transport sector has strong ties to the water transport sector but only a weak intensity of networking within its own sector. There is an average intensity of networking between air transport and postal and courier activities. In addition, land transport and warehousing maintain high cooperation intensity. The other cluster core industries are only loosely connected to one another.

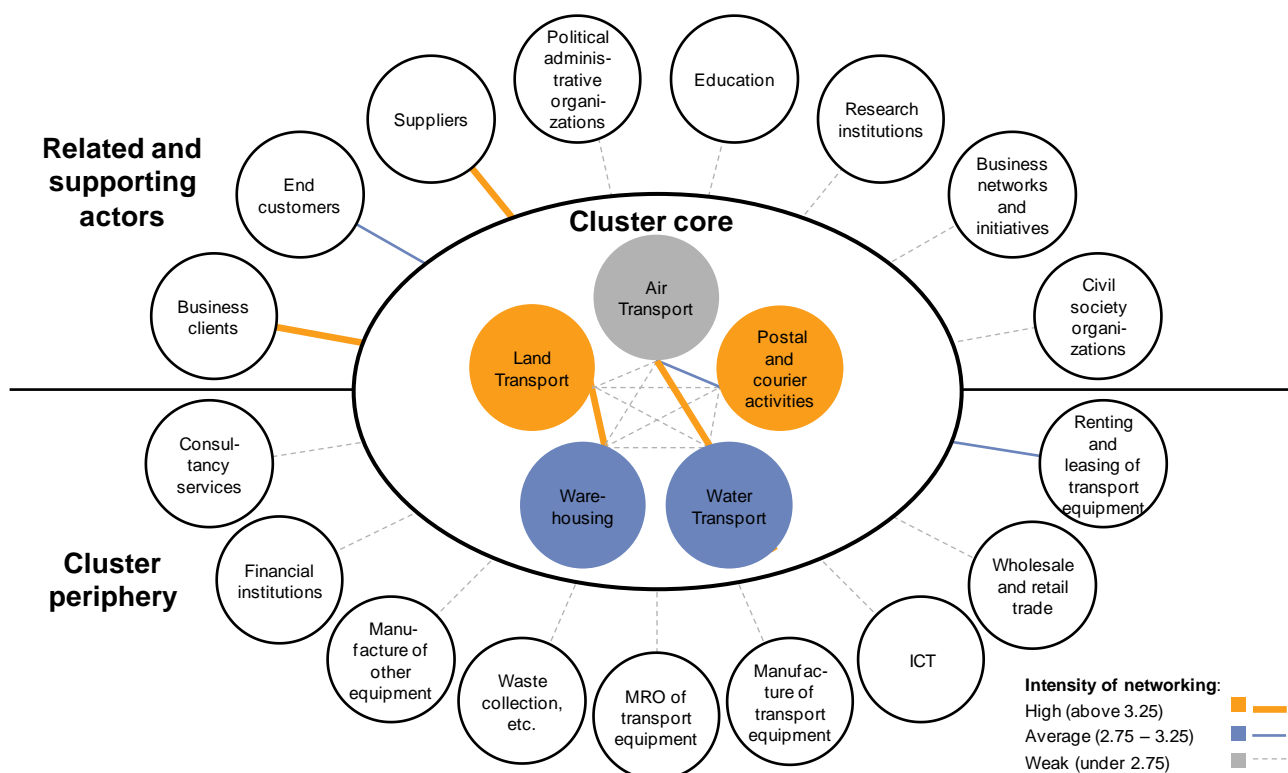


Figure 46 Cooperation intensity in the Region of Aragón

Source: Own, data basis online-survey, 2012.

Note: Based on the average evaluation of the cooperation intensity with respective cooperation partners, scale 1 = no cooperation to 5 = very intensive cooperation, number of ties = 1154.

The cluster core together has intense networking ties with business clients and suppliers and an average cooperation intensity with end customers. The intensity of networking between the cluster core and the cluster periphery is predominantly weak. However, the sector of renting and leasing of transport equipment has relations of average intensity with the cluster core.

As Figure 47 highlights, the regional cluster core of Aragón only has networking connections of weak intensity to potential partners in Europe. The European embeddedness of the regional cluster core could be improved further in the future.

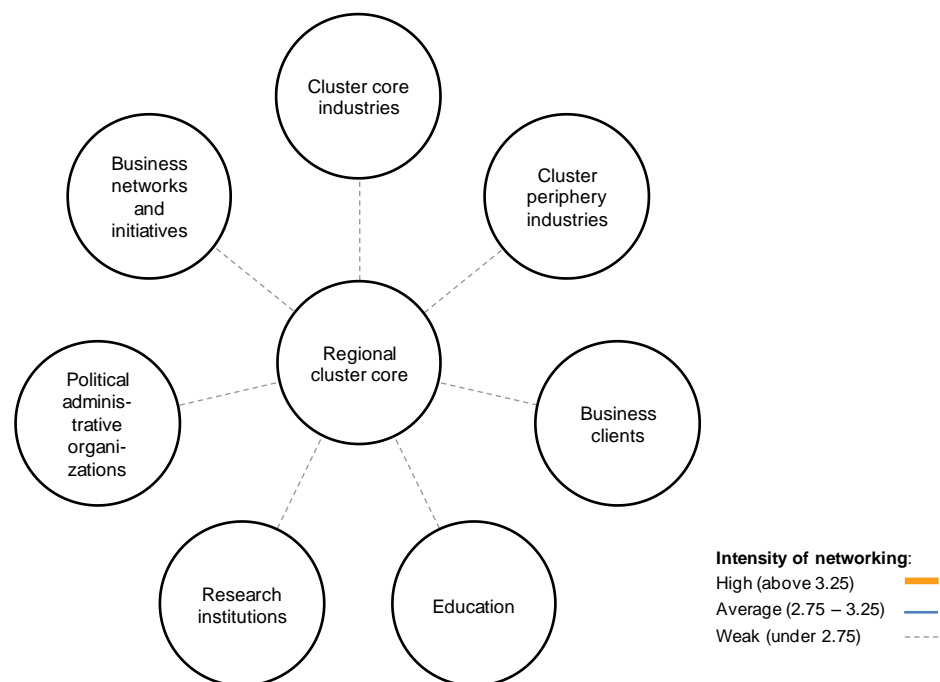


Figure 47 Cooperation intensity of the regional cluster core with Europe

Source: Own, data basis online-survey, 2012.

Note: Based on the average evaluation of the cooperation intensity with respective cooperation partners, scale 1 = no cooperation to 5 = very intensive cooperation, number of ties = 917.

5.3.3 Specific Context for Innovation

Figure 48 gives an overview of the importance of different drivers of firm innovation and how they are perceived by respondents of the online-questionnaire in the cluster region. Nearly 100% of the participants state the aim to increase or maintain market share as the most important driver for innovation. Improving quality of products, services or processes is seen as an equally vital driver; however, only around 29% rate this factor as very important. Among the drivers of innovation, environmental issues are evaluated to be of less concern. Nevertheless, approximately 50% of the respondents assess it as important or very important for the decision to develop innovation.

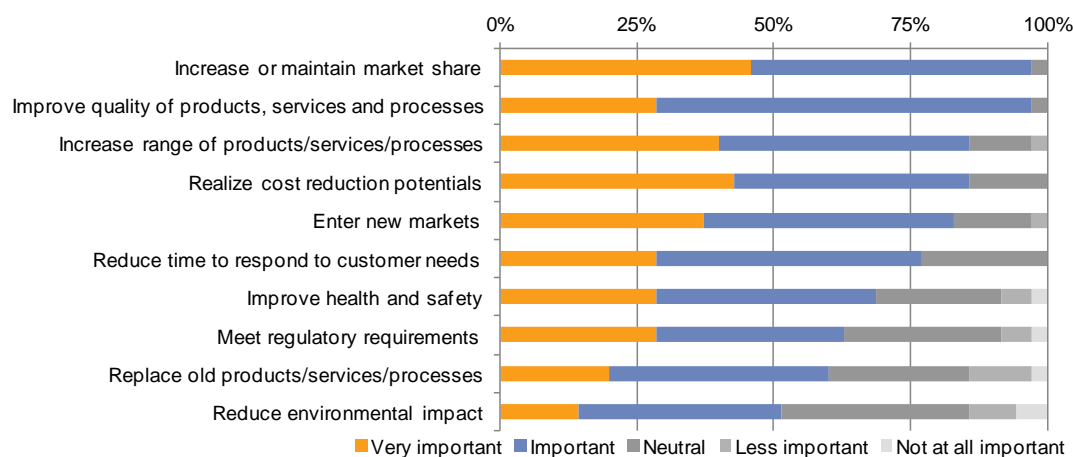


Figure 48 Drivers of innovation for companies in the Region of Aragón

Source: Own, data basis online-survey, 2012.

Note: Question on important drivers for firm innovation, n = 35.

As Figure 49 shows, 57% of the respondents assess the cost of innovation as their largest barrier to innovate. Missing or uncertain customer demand is another major barrier, followed by the lack of finance and the lack of innovation culture in the company.

None of the respondents sees the lack of external services and know-how as a barrier for innovation. Also, companies in the regional logistics sector seem to have sufficient partners to cooperate with, as only 6% of the respondents consider this factor as an obstacle for innovation. The ease of being a fast follower in the market is assessed as a less influencing barrier for innovation as well.

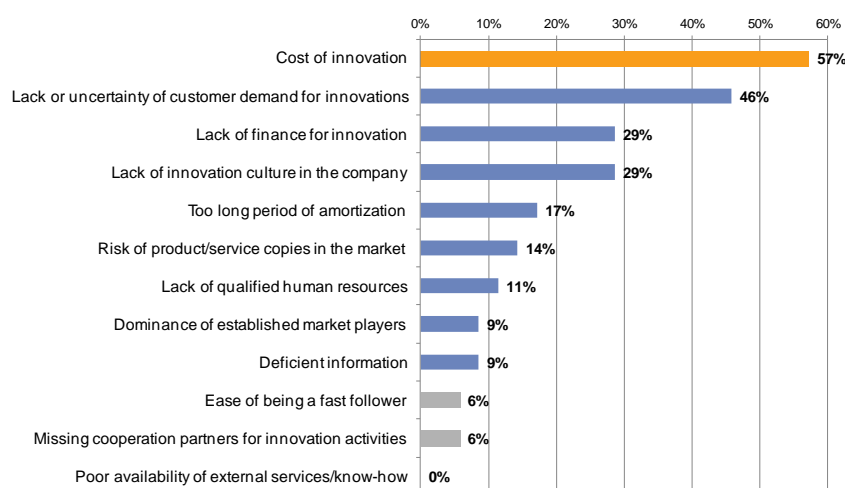


Figure 49 Barriers for innovation in companies in the Region of Aragón

Source: Own, data basis online-survey, 2012.

Note: Question on largest barriers for firm innovation, n = 35 (max. 3 selections possible).

In the online-questionnaire, respondents were asked to indicate how often they receive knowledge from different sources which is relevant for innovation. The following figure gives an overview of selected sources and the frequency of knowledge transfer between these and the responding firms in the region. The order is given according to the accumulation of the categories "Always" and "Very often".

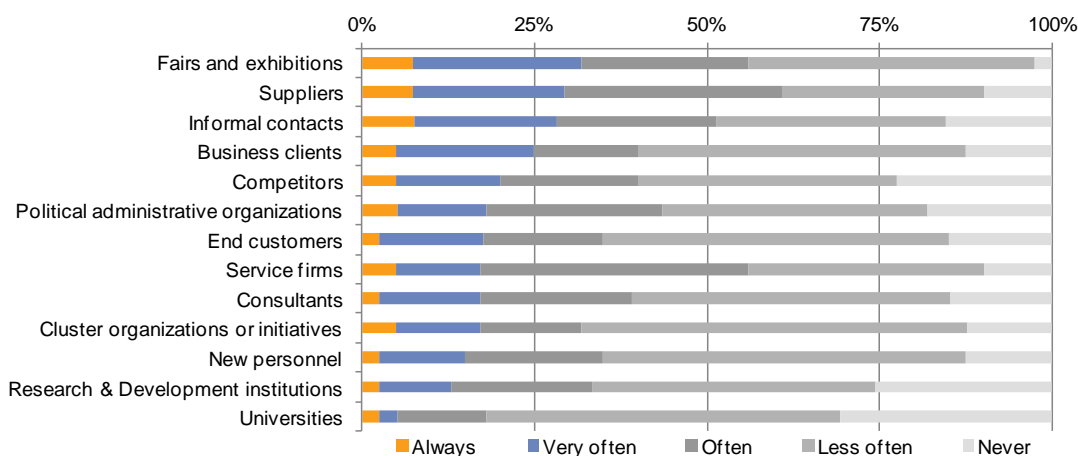


Figure 50 Sources of knowledge for innovation in the Region of Aragón

Source: Own, data basis online-survey, 2012.

Note: Question on the sources of information or knowledge that is relevant for firm innovation, n = 40.

More than 25% of the respondents in the Region of Aragón always or very often receive knowledge that is relevant for innovation from fairs and exhibitions, from suppliers and from informal contacts. In contrast, more than 25% never receive relevant information from R&D institutions and universities. The latter category ranks last and only 5% of the respondents indicates that universities are always or very often a source of knowledge for innovation.

5.4 Øresund Region

The Øresund Region is located in the Eastern part of Denmark and the Southern part of Sweden, consisting of the regions of Scania (Skåne), Zealand and the Capital Region of Denmark. The cluster region is inter-connected by the Øresund Bridge and is the main gateway between Scandinavia and continental Europe for all modes of transportation as well as a distribution hub to Scandinavia and the Baltic rim. Major players, such as A. P. Møller-Mærsk, Tetra Pak, Nestlé and IKEA, are located in the Danish and Swedish part of the cluster region. However, interviewees mention that there are still some barriers to a fully integrated Øresund Region, due to different administrative and legal practices and mindsets of people. The following results of the analysis might thus be interpreted differently when considering the different countries rather than the cluster.

5.4.1 Evaluation of the Regional Business Environment

The importance of the cluster region for logistics is underlined by Figure 51, which shows the perception of the respondents to the online-survey of the Øresund Region as an important present and future location for the logistics and logistics-related sector. The higher rated future importance implies the positive anticipation of the cluster region and that respondents are confident it will further develop as a central gateway for logistics.

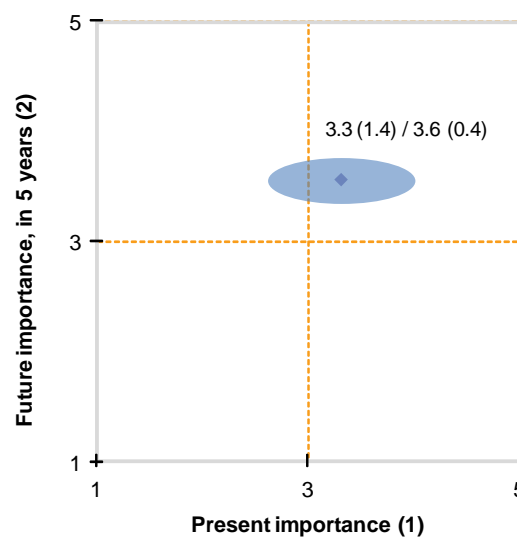


Figure 51 Importance of the Øresund Region for the logistics & logistics-related sector

Source: Own, data basis online-survey, 2012.

Note: 1) Question on the present importance of the region for the logistics & logistics-related sector, scale 1 „unimportant“ to 5 „very important“, n = 38. 2) Question on the importance of the region for the logistics & logistics-related sector in 5 years, scale 1 „unimportant“ to 5 „very important“, n = 38. The data point represents the average evaluation, the circle shows the variance.

The following analysis of the regional business environment using the Porter Diamond Model will allow a further differentiated perspective on the importance of the cluster for logistics.

Factor conditions

Figure 52 gives an overview of how respondents to the online-questionnaire evaluate different items related to the factor input for logistics operations in regional companies. The graph illustrates the average evaluation of the items according to a 5-point Likert scale and the average relevance in percent of answers.

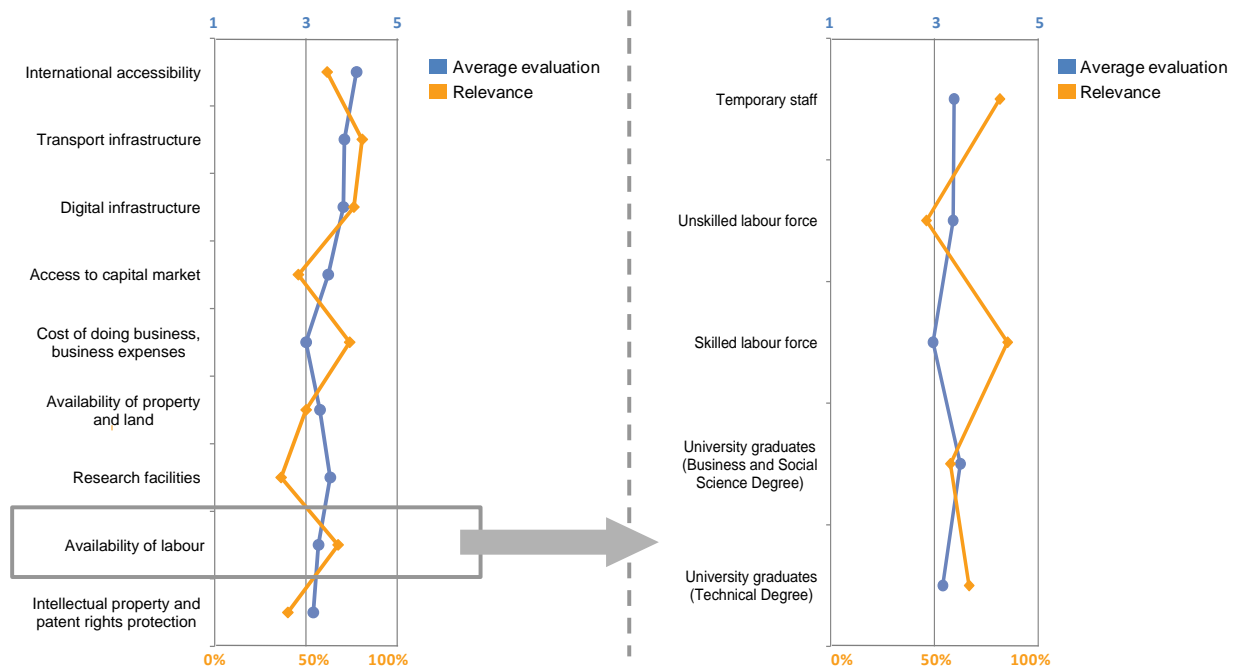


Figure 52 Factor conditions in the Øresund Region

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = very poor or very low, 3 = neutral, 5 = very good or very high, n = 35; 37.

The average evaluation of the international accessibility clearly reveals that the respondents are pleased with this factor in the Øresund Region. The cluster is the main transit region to the European continent for Sweden and the regional conditions allow a centralized access to Scandinavia and the Baltic Sea via Øresund. Over 1,200 European cities can be reached by road from the Øresund Region in one day and the international Copenhagen airport Kastrup is an important factor for the accessibility of the cluster, too. These advantages also cause heavy traffic flows with congestion and emissions as a natural but unfortunate result (Carlsson, 2008).

The evaluation of the transport infrastructure is slightly inferior but still evaluated very good or good by almost 80% of the participants of the online-survey. On average, this factor is relevant for four out of five respondents. Interview partners highlight the possibilities for multi-modal transport but also criticize the rail conditions. Particularly, the different railway systems and technological solutions as well as the one-way track sections are a hindrance to rail transport. As a consequence, customers tend to use road transport to a greater extent (Carlsson, 2008). The most important harbours in the Øresund Region are Copenhagen Malmö Port, Helsingborg, Trelleborg, Landskrona and Ystad. Road and railway networks in general are well developed on both sides of the Øresund channel. Twelve years after the opening of the Øresund Bridge, the cluster region has experienced increased integration. The construction of the Fehmarnbelt Tunnel is another major infrastructure project. It is planned to open in 2021 and will create a fixed link between Zealand and northern Germany in the future. A possible further transport investment could take the form of a tunnel solution between Helsingør and Helsingborg (Carlsson, 2006; Tornblad & Henriques, 2011).

The digital infrastructure has been evaluated with an average of 3.8. Slightly inferior to this item, the access to capital markets is assessed with an average of 3.5. The costs of doing business are relevant to more than 70% of the respondents, but only one respondent out of five agrees that these are very good or good within the cluster. Availability of property and land receives an average evaluation of 3.3 and is relevant to 50% of the responding companies.

Having a closer look at the labour market, it becomes obvious that temporary staff and skilled labour are very relevant to the respondents and that the availability of skilled labour is evaluated as low or very low by almost 40% of them. In addition, the findings of the meta-analysis indicate that the cluster region will be faced with a future shortage of less or averagely educated labour. Interview partners agree that the educational structures in the Øresund Region are good, there are several high-ranked universities offering education in logistics and supply chain management. In line with this argument, almost half of the respondents rate research facilities as good or very good.

More than three quarters of the respondents assess the intellectual property and patent rights protection to be of medium quality.

Demand conditions

Figure 53 shows the perception of respondents of the demand conditions in the cluster region. The individual factors are evaluated equally well and are deemed as relevant for the success of the responding companies.

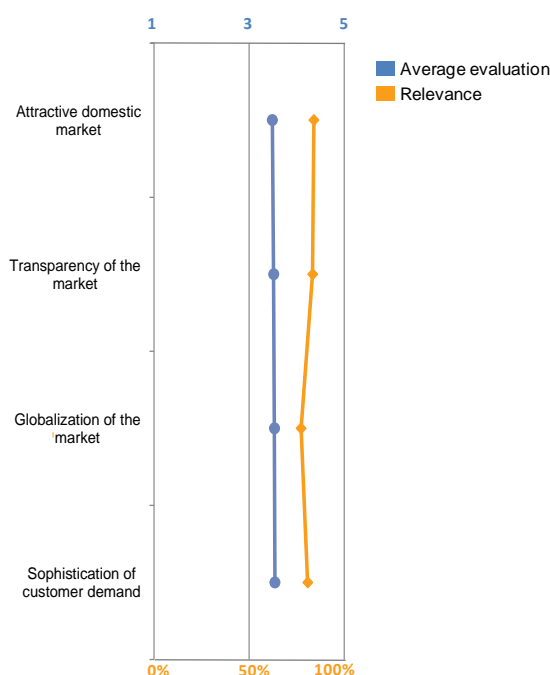


Figure 53 Demand conditions in the Øresund Region

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = fully disagree, 3 = neutral, 5 = fully agree, n = 36.

The Øresund Region has a large local market with a high degree of purchasing power. With close to 4 million inhabitants in the cluster region, there is a great demand for logistical services (Carlsson, 2008). Accordingly, almost 55% of the respondents agree or fully agree that there is an attractive domestic market and more than 80% believe this factor is relevant for company success. On the contrary, there is an over capacity in the Øresund logistics system, leading to poor fill rates or loading factors and lower efficiency per transport resource, thus boiling down to the fact that there is not enough demand to match the supply (Carlsson, 2006).

Transparency and globalization of the market have very similar average evaluations. As one of the interviewees points out, most logistics activities in the Øresund Region are related to the global

market, there is a lot of import and export activity. With the upcoming fixed link over the Fehmarnbelt, there is the chance that the cluster's position as a hub will probably increase (Lohse & Jespersen, 2010). The sophistication of customer demand is evaluated similarly to the other demand conditions.

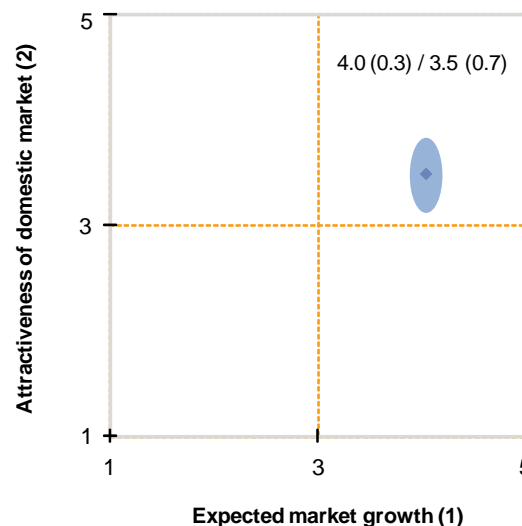


Figure 54 Market-attractiveness-growth matrix of the Øresund Region

Source: Own, data basis online-survey, 2012.

Note: 1) Question on the expected market growth of the logistics & logistics-related sector in the next 2-3 years, scale 1 „strong market shrinkage“ to 5 „strong market growth“, n = 27. 2) Question on current the market attractiveness of the logistics & logistics-related sector, e.g. rentability, scale 1 „very unattractive“ to 5 „very attractive“, n = 37. The data point represents the average evaluation, the circle shows the variance.

According to Figure 54, respondents believe in the future potential of the cluster, as almost 90% are of the opinion that there will be market growth in the sector in the next years. As already hinted at in the previous passage, the current domestic market is also considered to be attractive.

Context for firm strategy, structure and rivalry

Figure 55 presents the context in which firms are created and managed as well as the nature of domestic rivalry. Most importantly, there is an intense competition in the region and a large number of factors are evaluated by the respondents in the cluster region as being very relevant.

With an average evaluation of 3.6, the respondents assess the innovation climate as medium to high. In line with this evaluation, several interviewees attest to the Øresund Region an innovation-friendly environment.

The image of the sector is evaluated slightly inferior, but still almost 50% agree that the image is good or very good. Nevertheless, interview partners stress that there is a need to improve the image of the regional logistics sector in order to be able to attract new personnel on all company levels in the future.

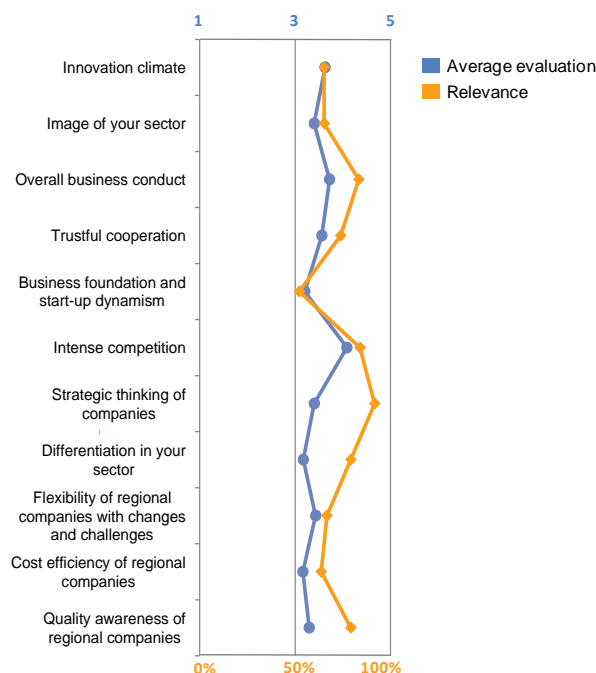


Figure 55 Context for firm strategy, structure and rivalry in the Øresund Region

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = fully disagree or very poor, 3 = neutral, 5 = fully agree or very good, n = 35.

Regarding the evaluation of the professionalism of the overall business conduct in the cluster region, only 3% of the respondents assess this factor inferior to neutral and it is relevant to more than 80%. Likewise, trustful cooperation in the cluster is rated very poor or poor by only 6% of the respondents. More than 30% of the respondents fully agree or agree that the Øresund Region is characterized by business foundation and start-up dynamism, the average evaluation of this factor being 3.2.

75% of the respondents fully agree or agree that there is an intense competition in the Øresund Region and 84% assess this factor as relevant for the company's success. The meta-analysis gives further evidence for this situation: According to the findings, the competition in the region is fierce and at the same time, Øresund is receiving more and more competitive pressure from nearby regions such as Hamburg and Gothenburg (Carlsson, 2006). Several interviewees point out that the very strong competition leads to competitive and productive companies in the cluster as otherwise, they would not succeed in the market.

More than 90% believe that the strategic thinking of companies in the region is relevant for their own company's success, but by more than 50% of the respondents it is evaluated neutrally. 43% are satisfied or very satisfied with the strategic thinking of the companies in the Øresund Region.

The status of the Øresund Region as a hub and transit region for goods transport implies that there are a lot of hauliers and logistics companies in the region. When it comes to the differentiation of the regional companies in the sector, respondents only rate this item "neutral" in almost half of the cases; the same applies to the evaluation of flexibility, cost efficiency and quality awareness of the regional companies.

Networking and support structure

Concerning the support structure, there is a difference between the Danish and Swedish governance process that can be traced back to differences in governmental hierarchy and autonomy. These differences cause some barriers between the two countries when it comes to harmonising decision processes and developing joint actions. A further barrier is created by differing legislations. As an example, there are different maximum lengths of vehicles in Denmark and Sweden, meaning that Danish hauliers are allowed to move freely in Sweden but not the other way around (Carlsson, 2006).

Figure 56 shows the evaluations given by respondents to the online-questionnaire in the region. In general, the support structure is perceived as slightly inferior to the other dimensions of the regional business environment.

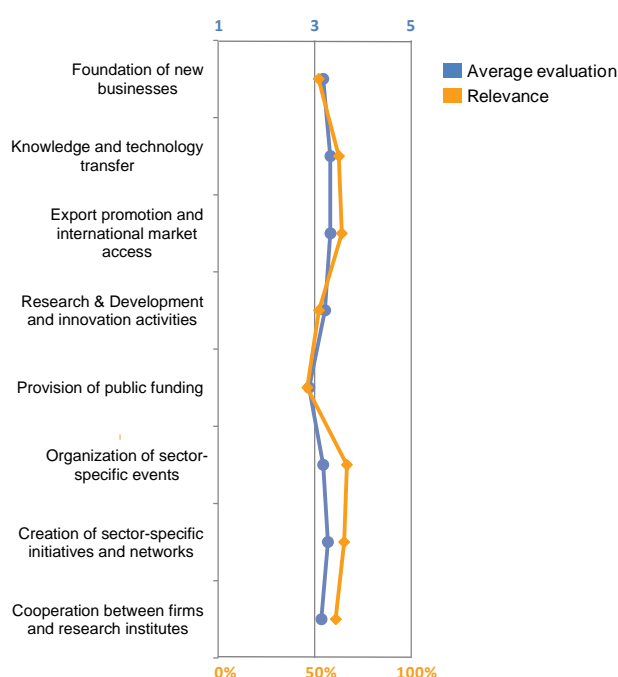


Figure 56 Networking and support structure in the Øresund Region

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = very dissatisfied or very poor, 3 = not applicable or neutral, 5 = very satisfied or very good, n = 33.

Support for the foundation of new businesses is evaluated as not applicable or neutral by almost 50% of the respondents. One of the reasons for this may be that the target group of the online-questionnaire is established companies, not specifically start-ups or young companies.

Support for knowledge and technology transfer in the Øresund Region is evaluated by the respondents with an average of 3.3. One interviewee mentions that differences between legal and administrative practices in Denmark and Sweden hamper the interaction between the Danish and Swedish workforces and thus the flow of knowledge and ideas. Interviewees also stress that it is important to better disseminate knowledge from research and that collaborative projects between research institutes and companies could be beneficial to foster the knowledge transfer between these stakeholders. The cooperation between firms and research is given an average evaluation of 3.1 and is estimated as relevant for the company's success by slightly more than 60% of the

respondents. Support for export promotion and international market access is evaluated as satisfying or very satisfying by 50% of the respondents.

When it comes to the support of R&D and innovation activities, 42% of the respondents rate it as very satisfying or satisfying, 21% as dissatisfying or very dissatisfying. The first phase of the innovation process often starts with R&D and in consequence, a specialised R&D sector of relevant size and quality is a first step towards economic success in the modern knowledge economy. Coming to the ratio of the total R&D investments in Denmark and Sweden in 2005, 32 percent were directed to the Øresund Region (compared to 25% in 1997). Even though the Øresund Region might not be considered as a functionally united region today, it could be argued that a considerable amount of total R&D investments in Denmark and Sweden are concentrated here (Steenstrup, n.d.).

Support with the provision of public funding is evaluated as satisfying by 29% of the respondents, 37% rate it as not applicable and 34% believe the support is dissatisfying or very dissatisfying. Almost half of the respondents are satisfied with the support of sector-specific events.

Finally, support for the creation of sector-specific initiatives and networks is evaluated positively by around 50% of the respondents, 30% are dissatisfied. The Øresund University, as a cooperation structure between regional universities and the Øresund University Network, closed in August 2012. According to the meta-analysis, the Øresund Region has framed a new internal network of mobility and communication. An example for a cross-disciplinary network is the Transport Innovation Network. The primary objectives of this network are to create synergy, encourage match-making and generate research and development projects between stakeholders in the transport sector and research- and educational institutions as well as related sectors, such as energy and infrastructure. However, it is active only in the Danish part of the region (Transportens Innovationnetværk, n.d.).

5.4.2 Networking and Cooperation Intensities

Figure 57 shows that the cluster core in the Øresund Region is very well interconnected. Four out of five cluster core industries have a high intensity of networking within their respective sector; these are air, land and water transport as well as warehousing. No data is available regarding the intensity of networking within the sector of postal and courier activities. The land transport sector has highly intense network connections to all of the other four cluster core industries. The air transport sector maintains strong connections to land and water transport as well as to postal and courier activities. The warehousing sector has strong links to land and water transport and an average intensity of networking with air transport. Postal and courier activities are only weakly interconnected with water transport and warehousing.

Regarding the relations between the cluster core and the cluster periphery, there is a strong connection to the maintenance, repair & overhaul of transport equipment and several other averagely intense networking connections, e.g. to ICT or wholesale and retail trade.

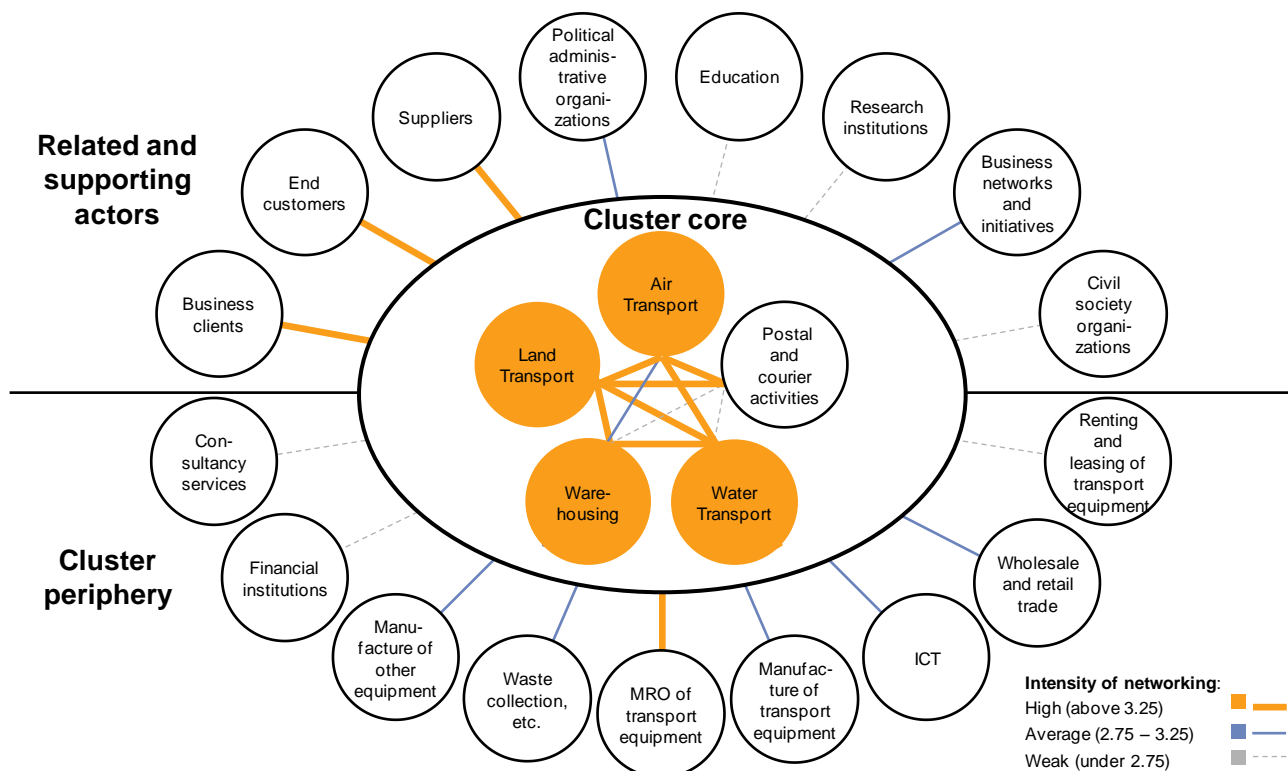


Figure 57 Cooperation intensity in the Øresund Region

Source: Own, data basis online-survey, 2012.

Note: Based on the average evaluation of the cooperation intensity with respective cooperation partners, scale 1 = no cooperation to 5 = very intensive cooperation, number of ties = 687.

Furthermore, the whole cluster core is involved in highly intense networking with business clients, end consumers and suppliers. The relations to political administrative organizations, business networks and initiatives are of average intensity.

Concerning the cooperation intensity on a European level, the cluster core of the Øresund Region has strong ties to European business clients and cluster core industries (Figure 58). Moreover, it maintains networking connections of average intensity to European business networks and

initiatives as well as political administrative organizations. The links to European cluster periphery industries and to educational and research institutions are less intense.

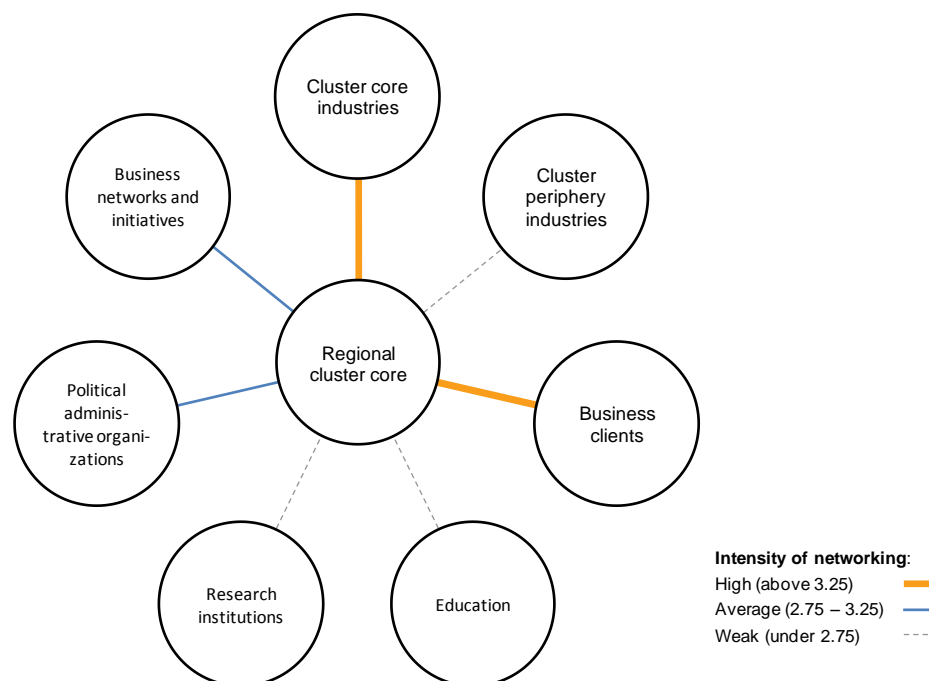


Figure 58 Cooperation intensity of the regional cluster core with Europe

Source: Own, data basis online-survey, 2012.

Note: Based on the average evaluation of the cooperation intensity with respective cooperation partners, scale 1 = no cooperation to 5 = very intensive cooperation, number of ties = 531.

5.4.3 Specific Context for Innovation

Figure 59 provides an overview of the importance of different innovation initialising drivers in the company and how they are perceived by respondents of the online-questionnaire in the cluster region.

The most important driver for innovation in the Øresund Region is the aim to increase or maintain market share. All of the respondents rate this item as an important driver for innovation in the cluster region. Replacing old products, services or processes is considered as an important driver of innovation by over 92%.

Both entering new markets and reducing environmental impacts are perceived as less important, but still almost 75% or 70% of the respondents consider these items as important or very important drivers of innovation.

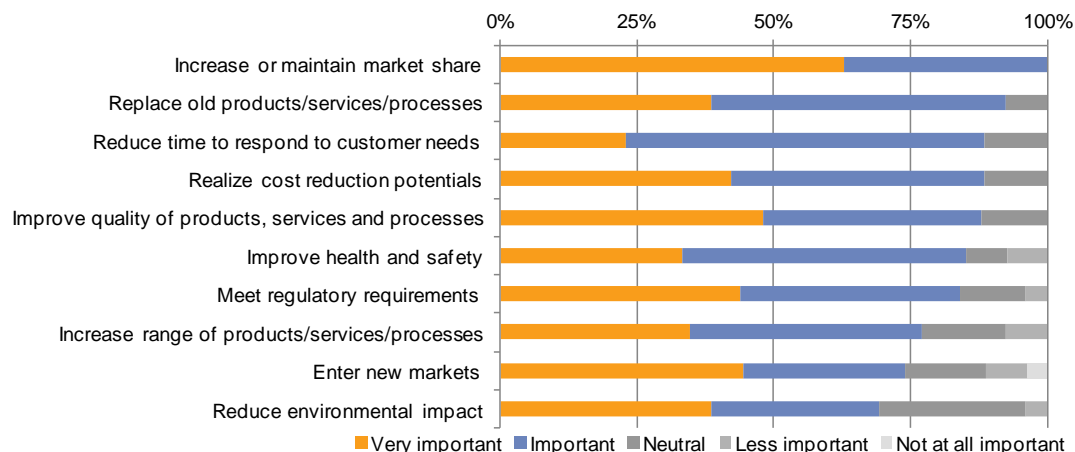


Figure 59 Drivers of innovation for companies in the Øresund Region

Source: Own, data basis online-survey, 2012.

Note: Question on important drivers for firm innovation, n = 26.

As Figure 60 shows, the respondents perceive the lack or uncertainty of customer demand as the largest barrier for innovation in the company. Exactly 50% of the respondents evaluate this item as the largest barrier. The lack of skilled employees in the logistics sector is another major barrier, followed by the cost of innovation. The poor availability of external services and know-how is assessed as a barrier by only 4% of the respondents of the online-questionnaire; the same applies to the ease of being a fast follower in the market.

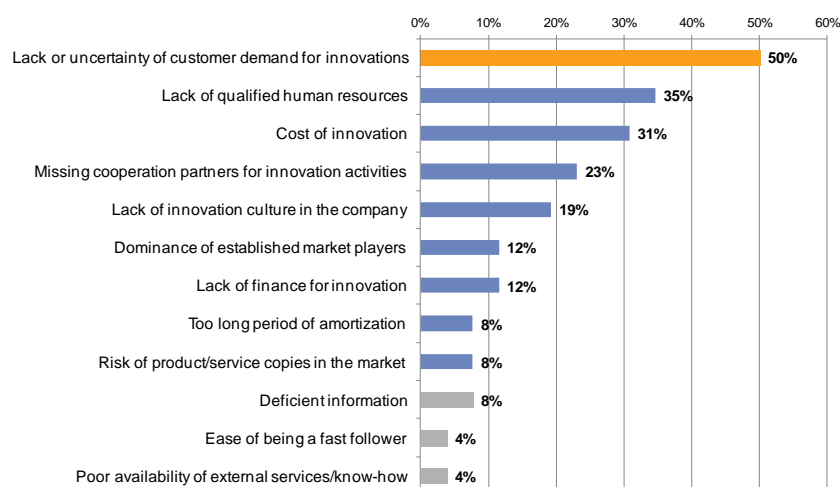


Figure 60 Barriers for innovation in companies in the Øresund Region

Source: Own, data basis online-survey, 2012.

Note: Question on largest barriers for firm innovation, n = 26 (max. 3 selections possible).

In the online-questionnaire, respondents were asked to indicate how often they receive knowledge from different sources which is relevant for innovation. The following figure gives an overview of selected sources and the frequency of knowledge transfer between these and the responding firms in the region. The order is given according to the accumulation of the categories "Always" and "Very often".

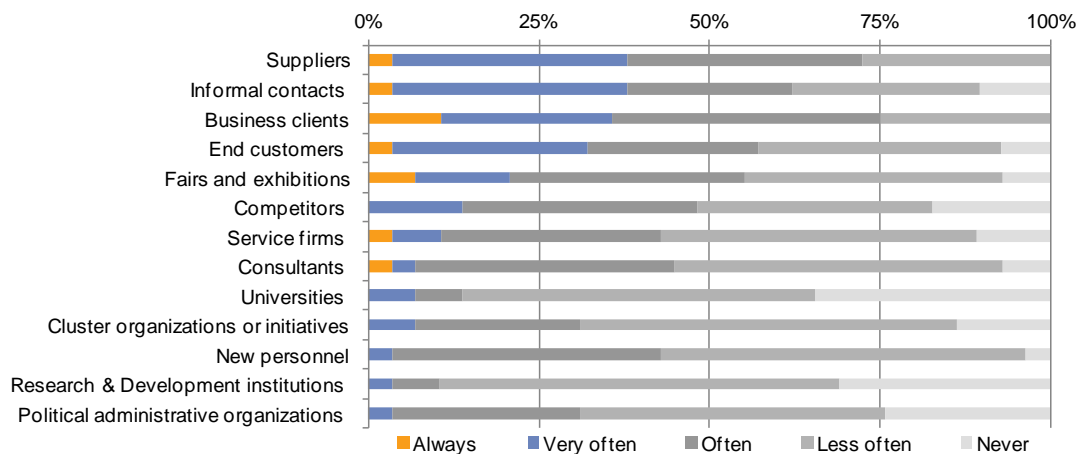


Figure 61 Sources of knowledge for innovation in the Øresund Region

Source: Own, data basis online-survey, 2012.

Note: Question on the sources of information or knowledge that is relevant for firm innovation, n = 29.

Suppliers, informal contacts and business clients are the most frequent sources of knowledge relevant for innovation in the cluster region. With only 3% of the respondents evaluating new personnel, R&D institutions and political administrative organizations as their usual knowledge provider ("always", "very often"), these sources rank last.

5.5 Mersin Logistics Cluster

The Mersin region has a long tradition as a commercial centre. Its geographical position between the Middle East, CIS countries, Europe and Africa as well as the proximity to international maritime routes predestines the cluster region as a gateway. 1,024,171 handled twenty-foot equivalent units in 2010 make the Mersin port the second largest container port in Turkey and 94th in the world (American Association of Port Authorities, 2010).

5.5.1 Evaluation of the regional business environment

Figure 62 shows how respondents of the online-survey assess the importance of the Mersin Logistics Cluster. With over 90% agreement, there is overwhelming consent on both the current as well as the future importance of the cluster region for the logistics and logistics-related industry.

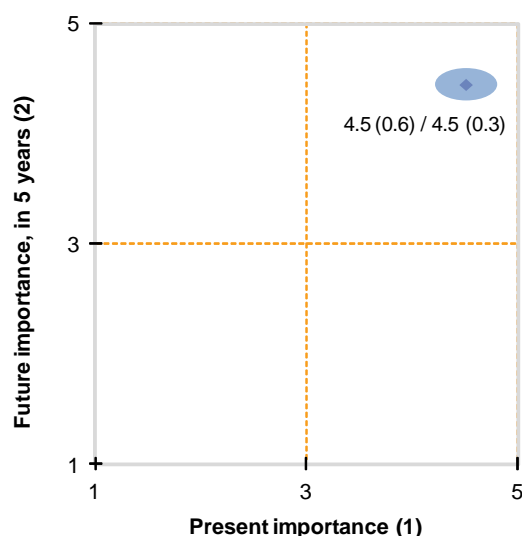


Figure 62 Importance of the Mersin Logistics Cluster for the logistics & logistics-related sector

Source: Own, data basis online-survey, 2012.

Note: 1) Question on the present importance of the region for the logistics & logistics-related sector, scale 1 „unimportant“ to 5 „very important“, n = 24. 2) Question on the importance of the region for the logistics & logistics-related sector in 5 years, scale 1 „unimportant“ to 5 „very important“, n = 24. The data point represents the average evaluation, the circle shows the variance.

The following analysis of the regional business environment along the Porter Diamond Model will allow a further differentiated perspective on the importance of the cluster for logistics.

Factor conditions

Figure 63 gives an overview of how respondents to the online-questionnaire evaluate different items related to the factor input for logistics operations in regional companies. The graph illustrates the average evaluation of the items according to a 5-point Likert scale and the average relevance in percent of answers.

The international accessibility is considered to be good or very good by 71% of the respondents, with an average rating of 4.0. With 95% agreement, this aspect is the second most relevant of all factor conditions. The physical infrastructure shows greater relevance (82%) than the digital infrastructure (73%), yet evaluations are more positive for the latter. 71% consider the digital landscape as good or very good (average rating of 3.6), while the same is only true for half of the respondents with regard to the transport infrastructure, with an average rating of 3.5. The Mersin

port is the major determinant of the regional logistics industry and has been given priority in national hub development (Maestro Consultancy & Yıldıztekin, 2008). It serves as a connection for maritime and multimodal land transport.

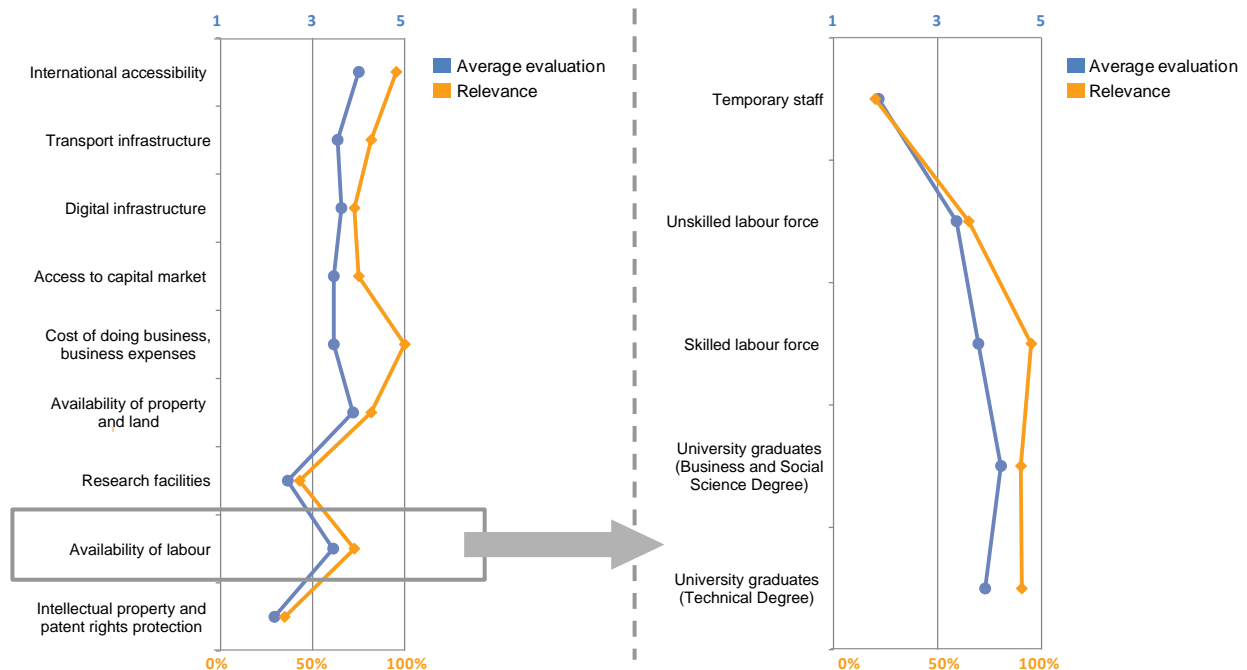


Figure 63 Factor Conditions in the Mersin Logistics Cluster

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = very poor or very low, 3 = neutral, 5 = very good or very high, n = 24; 23.

The cluster region provides for a free-trade zone and represents a large hinterland entry point especially for the agricultural industry of south-eastern Turkey (Maestro Consultancy & Yıldıztekin, 2008). The port and the region are connected to the national railroad system, which also reaches into neighbouring countries, such as Syria and Iran. Compared to sea and road transport, the share of freight transported into the region via rail is negligible (Ener, 2010). The railway system faces some challenges, such as bottlenecks in handling facilities (Maestro Consultancy & Yıldıztekin, 2008). Another critical fact is that the road system is generally considered to be insufficient and of poor quality. A further demand for inland container terminals has been identified (Sezer, 2007). Air transport plays a minor role in the region. As for an interview partner, Adana airport lacks handling equipment and storage facilities. Nevertheless, there has been an investment plan to develop the Çukurova Airport. Storage area around the Mersin port has been seen as scarce. The port in general has limited potential area for expansion, which may not suffice for future demand (Maestro Consultancy & Yıldıztekin, 2008).

In an expert opinion, due to its location within the city, traffic problems are likely to increase in the future. Compared to rival ports in the Eastern Mediterranean region, Mersin has potentials to catch up in terms of physical infrastructure (Oğuztimur, 2008). Adding to this, the IT infrastructure of the port and customs have been perceived as deficient (Sezer, 2007). Yet, investments in port automation systems and networks have been made (Maestro Consultancy & Yıldıztekin, 2008).

The access to labour in the cluster region receives ambiguous evaluations. Whereas temporary staff is almost irrelevant but also hardly available (only 9% deem it as good or very good, average rating of 1.9), the importance of skilled labour and university graduates is high and at least 60%

approve that these items are good or very good in their availability. An advantage of the region with regard to the labour force is the weak organization within labour unions (Sezer, 2007).

Opinions on labour availability are ambiguous though. Whereas the availability of skilled labour is in some cases positively mentioned, other sources as well as interviewees criticize a lack of supply of the same (Maestro Consultancy & Yıldıztekin, 2008; Metin, 2010; Sezer, 2007). Even further, the output of high schools and undergraduate programs apparently does not seem to be satisfying in some cases. In contrast, there are huge numbers of unskilled and unemployed persons in the region (Metin, 2010). Mersin University has established a Logistics Research Centre as well as vocational education and instructional programmes in order to develop skilled labour for the industry (Maestro Consultancy & Yıldıztekin, 2008; Sezer, 2007). Further, according to an expert, there is some cooperation developing between vocational high schools and the chambers of commerce. Still, universities in the region lack graduate programs. Further capacities in logistics master education are soon to be built up in cooperation with the private sector.

When it comes to access to funding on the capital market, less than half of the respondents (42%) would consider it good or very good, at an average rating of 3.5. For 75% it is relevant for their business. Permissions for investments in the Mersin port have been recognized to be overly bureaucratic, possibly due to resistance and/or lack of effectiveness of local authorities. Sufficient capital is hardly to be found (Sezer, 2007). It has also been recognized that customs and general bureaucratic procedures are still too extensive (Maestro Consultancy & Yıldıztekin, 2008).

With 82% consent, the availability of property and land is more important for the regional business world than the access to financial capital. 67% agree on a good or very good quality of this factor, with an average rating of 3.9.

The level of business expenses represents the most important factor condition for business success (100% relevance). In contrast to the importance, less than 40% are very content or content with the cost of doing business in the cluster region. Reasons might be found in the lack of professionalism in parts of the business world. As an example, price calculations for port service provisions have until recently not been made according to systematic cost estimations. Not surprisingly, port service fees are high compared to other Mediterranean ports (Maestro Consultancy & Yıldıztekin, 2008; Oğuztimur, 2008; Sezer, 2007).

Intellectual property and patent rights protection ranks lowest of all factor conditions both with regard to quality (13% good or very good, average rating of 2.2) and relevance (35% agreement). Evaluations on regional research facilities are also strikingly weak. Only 21% are content or very content, the average rating at around 2.5. Less than half of the respondents deem this aspect as being important.

Demand Conditions

Figure 64 shows the perception of respondents of the demand conditions in the cluster region. The individual factors are deemed as very relevant for the success of the responding companies.

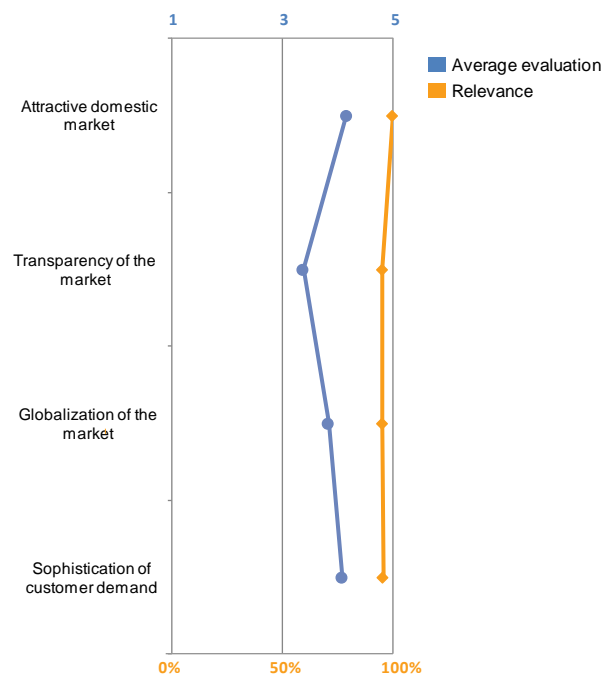


Figure 64 Demand conditions in the Mersin Logistics Cluster

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = fully disagree, 3 = neutral, 5 = fully agree, n = 24.

The demand conditions in Mersin are central to the success of the regional business world. All factors have relevance above 90%. 88% of the respondents consider the current regional market attractive. Yet, according to 58%, there is significant potential for improvement in regard to market transparency (average rating of 3.4). Two out of three respondents would consent to having a globalized market in Mersin, at an average rating of this factor of 3.8.

Continued positive growth stimulus is expected from an increase in trade of Eastern Mediterranean and Middle Eastern regions. Container handling is one of the strengths of the Mersin port. According to interviewees, the amount of bulk and container freight increases, while the processed general cargo volume decreases. Mersin is the sole container transshipment centre on the Mediterranean coast of Turkey and is integrated into world trade mainly via feeder vessels; it is not a final destination for large-scale container ships (Oğuztimur, 2008). In that respect, especially the expansion of the region as a node for short sea shipping – a transport approach much favoured and supported by the European Union – yields further potential (Maestro Consultancy & Yıldıztekin, 2008). Interview partners mention that Mersin plays a significant role in the long-term plans of the European Union to connect to the Middle East, the Caucasus and North African markets. In that, the port of Mersin has been accepted for the Sea Highway Project expansion plan of the European Union.

While the geographical location at the intersection of several world regions results in large potentials for the logistics sector, the proximity to, and dependency on, politically instable countries and regions is also considered to restrain the attractiveness of the location, as transport volumes

are constantly subject to possible volatility depending on the political developments in the vicinity (Oğuztimur, 2008; Sezer, 2007).

Over 80% would consider the customer base sophisticated, with an average rating of 4.1, which is in line with an earlier assessment (Sezer, 2007) but contradicts some of the findings from interviewed company representatives (see Context for firm strategy, structure and rivalry).

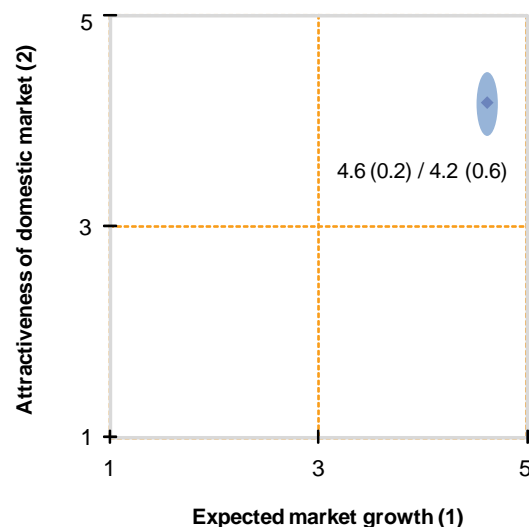


Figure 65 Market-attractiveness-growth matrix of the Mersin Logistics Cluster

Source: Own, data basis online-survey, 2012.

Note: 1) Question on the expected market growth of the logistics & logistics-related sector in the next 2-3 years, scale 1 „strong market shrinkage“ to 5 „strong market growth“, n = 24. 2) Question on the current market attractiveness of the logistics & logistics-related sector, e.g. rentability, scale 1 „very unattractive“ to 5 „very attractive“, n = 24. The data point represents the average evaluation, the circle shows the variance.

Figure 65 shows how respondents evaluate the market attractiveness in the present and in the future. Both items receive positive assessments; the market growth is expected to be very strong and shows outstanding evaluations with an average rating of 4.6.

Context for firm strategy, structure and rivalry

As with the overall demand conditions, the ratings of the relevance of the context for firm strategy, structure and rivalry are striking. At least 80% of the questionnaire respondents agree on the importance of each of the factors. Except for the innovation climate and quality awareness of regional companies, the relevance for the remaining factors is constantly above 90%.

The regional business world is apparently entangled in rigorous competition. 96% would agree or strongly agree on this characteristic, with the largest consent among respondents and an average rating of 4.7. In line with the fierce competition among companies, the region seems to feature strong start-up dynamism and thus business renewal (83% agreement, average rating of 4.0).

Less intuitive, however, are the relatively average efforts to differentiate (23% agreement, average rating of 3.0) or to focus on cost efficiency (33% agreement, average rating of 3.3), both being strategies that companies often implement to respond to competitive pressure. Contributing to a possible explanation, half of the questionnaire respondents are not entirely convinced that regional companies act according to a strategic plan (average rating of 3.6). Less than half of the

respondents believe that the ability of regional companies to react flexibly to changes is very good or good, at an average evaluation of 3.5. Yet, more than half of the respondents are relatively confident about the quality awareness (56% agreement, average evaluation of 3.3) and the overall business conduct of actors in the region (58% agreement, average evaluation of 3.6).

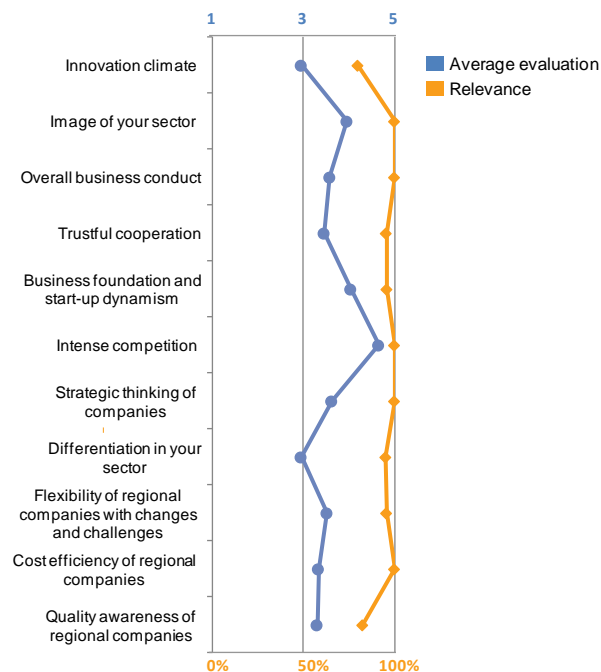


Figure 66 Context for firm strategy, structure and rivalry in the Mersin Logistics Cluster

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = fully disagree or very poor, 3 = neutral, 5 = fully agree or very good, n = 24.

Except for a few large-scale international and national enterprises, most companies in the region are small and medium-sized. There is still potential for the settlement of further large logistics service providers. Small companies often lack professionalism in their business conduct and provide goods and services without registration (Maestro Consultancy & Yıldıztekin, 2008). According to interview partners, the lack of professional management is a significant problem.

In an international context, most regional companies are not yet competitive. A further issue is the lack of real logistics service centres. At present, warehouses, stores, truck parks and similar facilities are dispersed all over the area. All the above factors often lead to dissatisfying service provision, high costs, time inefficiencies and ultimately to negative externalities for the image of the sector. There is huge further potential for an enhanced efficiency. For example, technology is not used up to its full potential, in part due to a lack of knowledge. Additionally, the cluster region does not feature a sophisticated consultancy industry in order to transfer knowledge on technical and other issues to regional logistics companies (Maestro Consultancy & Yıldıztekin, 2008).

Somewhat contradictory to the assessment of entrepreneurial activities, the strong ratings on business foundation are not accompanied by similar evaluations of the general climate of innovation. Only 25% of respondents would agree on this aspect, with average evaluations just under 3.0. Enterprises apparently lack innovative capabilities and seldom have R&D activities institutionalized (Metin, 2010). Interviewed company representatives name several reasons. For once, and partly contradicting findings known from the demand conditions, a significant barrier is a lack of demand for sophisticated logistics services. As customers generally ask for standard

services, such as transportation or warehousing, the exemplifying company from the interview is mainly focused on just upgrading standard IT technologies, such as vehicle traceability, instead of moving further in, for example, innovative logistics services. According to several company representatives, a lack of capital and knowledge and the poor availability of human resources are the main obstacles for implementing innovative activities in their enterprise. Finally, the high financial risk of innovative projects has been named.

Around 58% perceive trustful cooperation more as an exception than a rule, at an average rating of 3.5. With an average rating of 4.0 and a strong approval rate of 71%, questionnaire respondents deem the image of the sector in the region as to be positive.

Networking and support structure

In sum, the networking and support structure shows a consistent discrepancy between the relevance and the current quality and quantity of provision/availability.

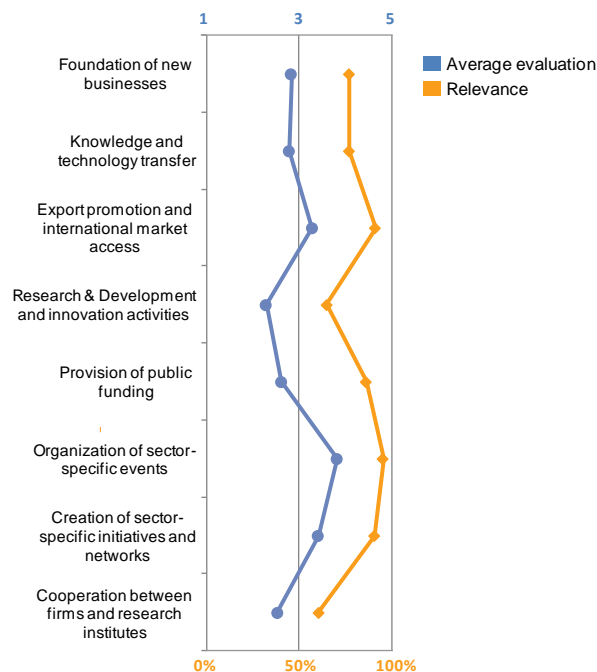


Figure 67 Networking and support structure in the Mersin Logistics Cluster

Source: Own, data basis online-survey, 2012.

Note: Likert scale 1 = very dissatisfied or very poor, 3 = not applicable or neutral, 5 = very satisfied or very good, n = 24.

According to questionnaire respondents, the public authorities do relatively well when it comes to support with the organization of sector-specific events (78% agreement, average rating of 3.8). With 95% approval, this aspect of the support structure is also of the highest relevance for the local business community.

Second in importance are support with export promotion and international market access as well as with the creation of sector-specific initiatives and networks (both 91% relevance). Still, while 54% would agree on a good performance of the public authorities in the latter aspect (average rating of 3.4), only 38% deem the support in international market access as reasonably satisfying, with an average rating of 3.3.

Other areas of public support which are considered relevant, such as support with business foundation (77% agreement, average evaluation of 2.8) and knowledge and technology transfer (77% agreement, average evaluation of 2.8), receive even lower ratings as the ones already mentioned, with merely one out of four respondents being positive about the existing offers.

When it comes to the support with research & development as well as innovation activities, 65% of the respondents perceive it to be relevant, with a contentedness of only 13% and at an average evaluation of 2.3. The evaluation of the general provision of public funding is in line. Although in 86% of the cases seen as highly relevant, only 17% of the respondents would consider this support aspect very good or good (average rating of 2.6).

As the establishment of trustful cooperation bears potential for improvement and opinions about existing research facilities were also relatively negative, it is not surprising that with only 17% very good or good evaluation and an average rating of 2.5, the cooperation between firms and research institutes is close to non-existent. Yet, it is relevant for 61% of the respondents and needs to be improved in the future.

The interviewed industry experts and papers dealing with the cluster region in general confirm the findings from the questionnaire. Cooperation between the private and public sector seldom takes place, and contacts to research institutions are still rare. Furthermore, even within the public sector, regional institutions seem to lack interaction and a joint approach to logistics. Some important regional actors, such as a dedicated investment promotion and consultancy agency, are still to be established (Maestro Consultancy & Yıldıztekin, 2008). There have been calls for a platform connecting the local government, the industry as well as further actors, such as research institutes or NGOs on common issues (Oğuztimur, 2008).

The newly established Mersin Logistics Platform has been a step forward in this regard. As an outcome of an earlier regional innovation strategy financed by the 6th framework programme of the European Commission, the platform targets to link local institutions with national and international actors and to enhance networking among the triple-helix at local, regional and national level. As a further outcome of the regional innovation strategy, the recently founded Research and Application Centre of Foreign Trade and Logistics at the University of Mersin should strengthen future collaboration between research and practice (Metin, 2010).

5.5.2 Networking and Cooperation Intensities

A strong networking intensity within their own industry is evident for four out of five cluster core sectors (an estimation of intra-industry networking intensity for postal and courier activities is not given due to a lack of data). As for inter-industry linkages in the core, especially the land transport sector shows strong relations with companies from the warehousing and water transport industry, reflecting the most important hub activities connected to the Mersin port.

The only further average connections pertain to the water transport industry, which networks on average intensity with warehousing and air transport enterprises. The postal and courier activities sector is apparently detached from the rest of the cluster core.

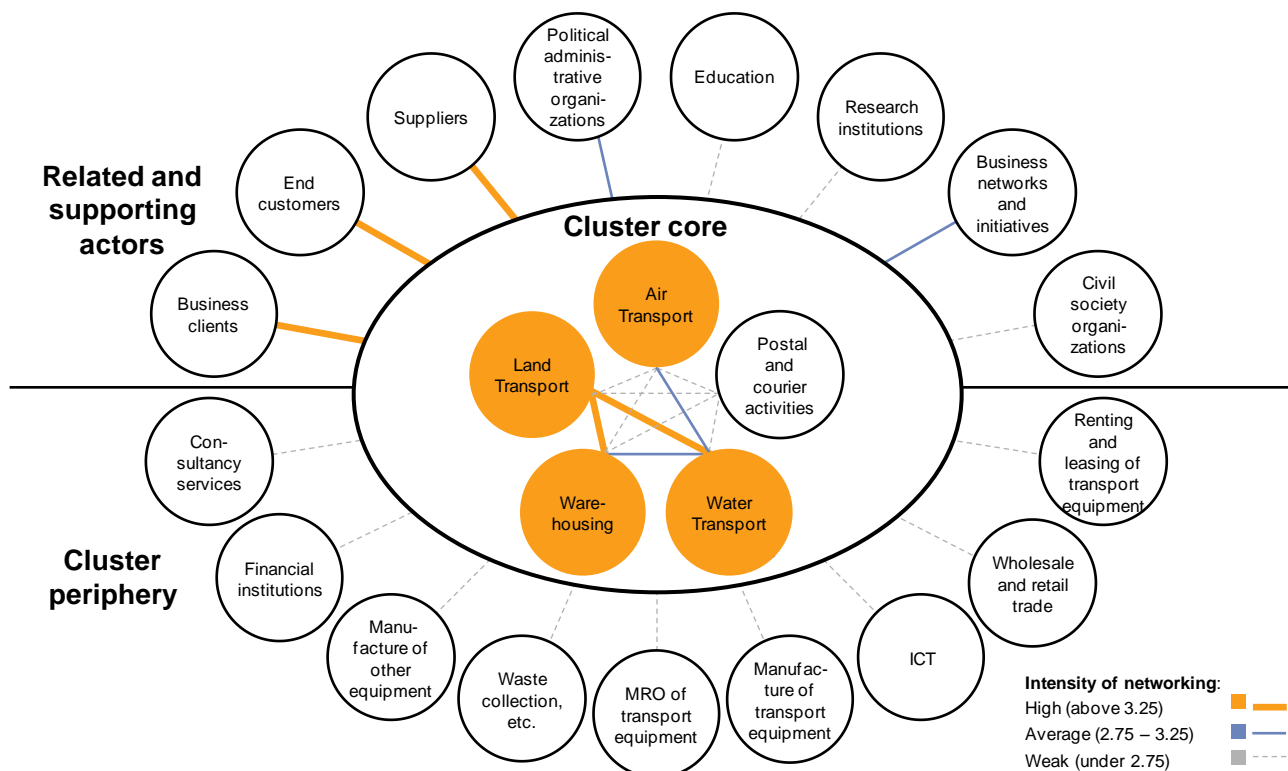


Figure 68 Cooperation intensity in the Mersin Logistics Cluster

Source: Own, data basis online-survey, 2012.

Note: Based on the average evaluation of the cooperation intensity with respective cooperation partners, scale 1 = no cooperation to 5 = very intensive cooperation, number of ties = 1073.

With regard to all peripheral industries of the cluster core, respondents indicate a complete lack of networking. Still, viewing the related and supporting actors, the cluster core maintains strong relationships to its customers and suppliers, an important prerequisite to formulate and implement innovative approaches to the existing logistics business. Further, some exchange exists between the core industries and business networks as well as the political sector.

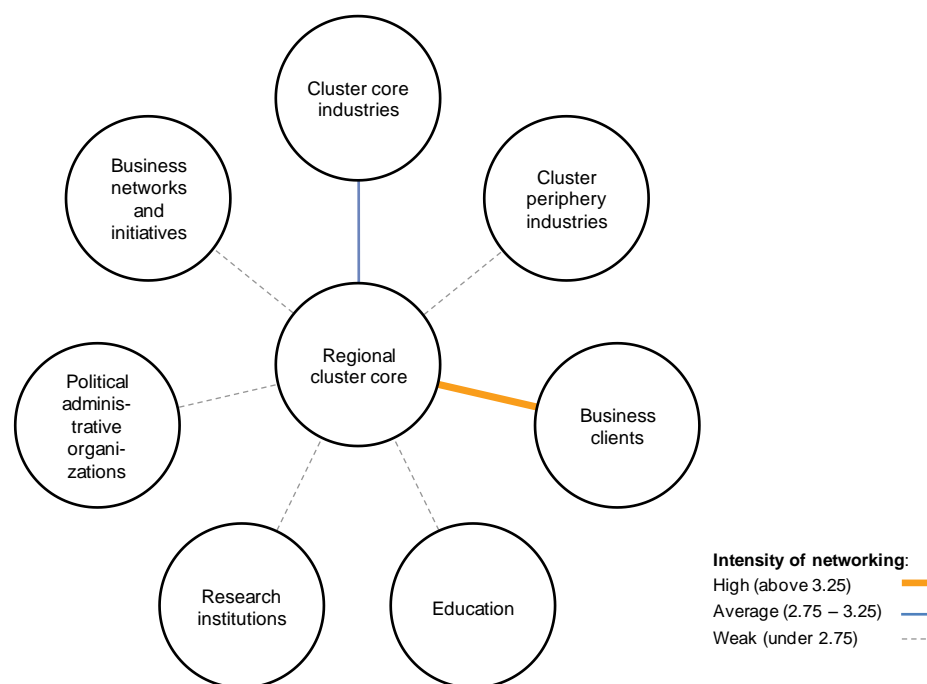


Figure 69 Cooperation intensity of the regional cluster core with Europe

Source: Own, data basis online-survey, 2012.

Note: Based on the average evaluation of the cooperation intensity with respective cooperation partners, scale 1 = no cooperation to 5 = very intensive cooperation, number of ties = 845.

The regional cluster core in Mersin maintains strong networking connections not only to local customers but also to business clients from European regions. Further, there appears to be some exchange with the core industries in other parts of Europe. Again, and similar to the networking structure within the cluster region, companies in Mersin are so far hardly connected to the cluster periphery on European level.

Other actors on European level, such as research and education institutes, policy actors or business networks and initiatives are also not the focus of Mersin's European cooperation activities.

5.5.3 Specific context for Innovation

Figure 70 shows that maintaining or increasing their market share is the most important driver of innovation for companies. Over 50% even thought it to be a very important driver. The entering of new markets on the second rank and the reduction of costs are considered to be very important by an even larger share of respondents (almost 75%). Increasing the range of products, services and processes – although very important or important for close to 75% – is only indicated by one out of five respondents as very important.

Improving health and safety is the least motivating factor for innovation, but with the indication of 50% of the respondents to be very important or important for them, it is in fact not irrelevant. Strikingly, for all but the three weakest drivers, respondents choose a neutral importance as their lowest evaluation and every factor is at least somewhat important.

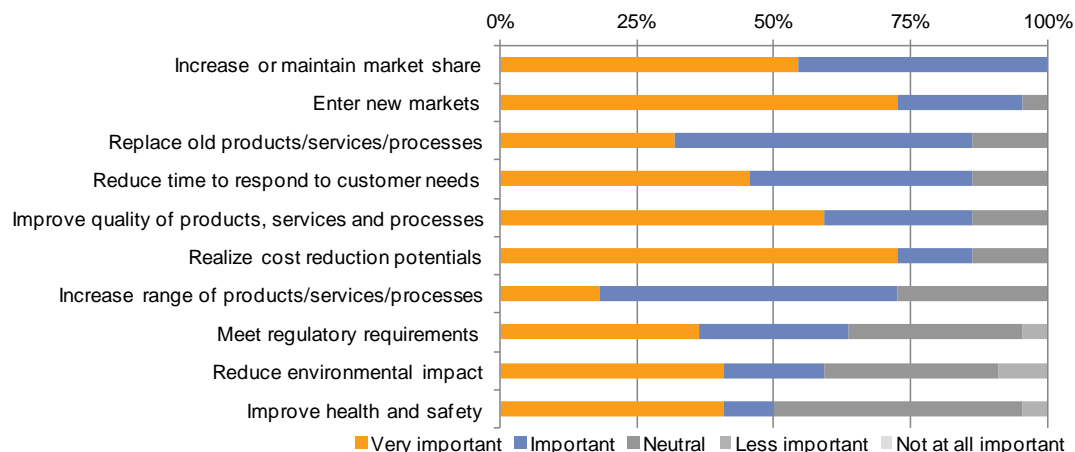


Figure 70 Drivers of innovation for companies in the Mersin Logistics Cluster

Source: Own, data basis online-survey, 2012.

Note: Question on important drivers for firm innovation, n = 22.

As can be implied from the statement of an interview partner, more than half of the respondents agree on the lack or uncertainty of customer demand as being the greatest hurdle for innovation activities. Further significant barriers arise through missing cooperation partners and a deficient level of information. Funding does not seem to be a major obstacle. Only 14% perceive a lack of financing as a major issue. The amortization period of investments in innovation do not seem to play a role at all.

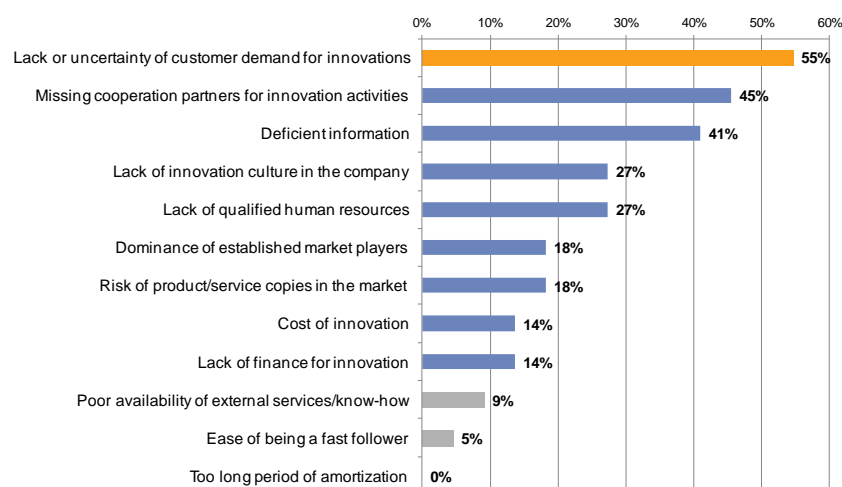


Figure 71 Barriers for innovation in companies in the Mersin Logistics Cluster

Source: Own, data basis online-survey, 2012.

Note: Question on largest barriers for firm innovation, n = 22 (max. 3 selections possible).

In the online-questionnaire, respondents were asked to indicate how often they receive knowledge from different sources which is relevant for innovation. The following figure gives an overview of selected sources and the frequency of knowledge transfer between these and the responding firms in the region. The order is given according to the accumulation of the categories "Always" and "Very often".

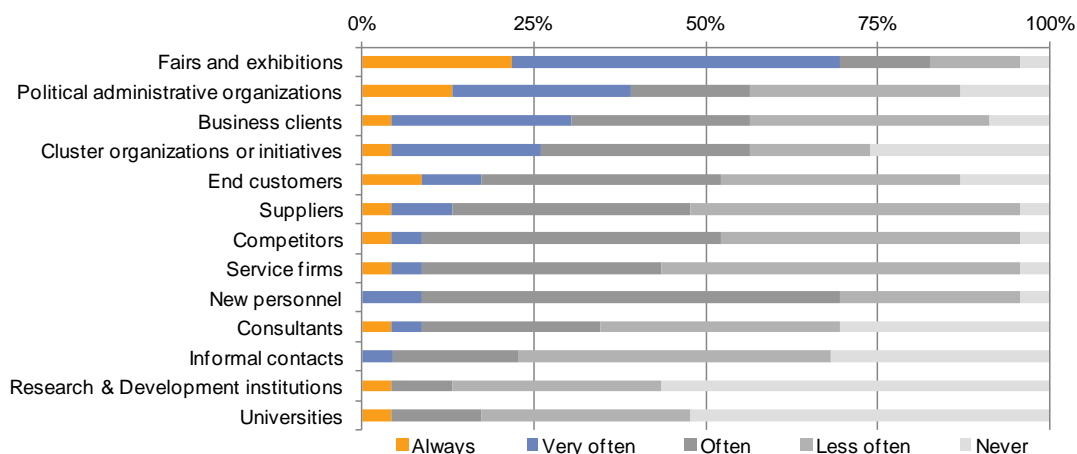


Figure 72 Sources of knowledge for innovation in the Mersin Logistics Cluster

Source: Own, data basis online-survey, 2012.

Note: Question on the sources of information or knowledge that is relevant for firm innovation, n = 23.

Fairs and exhibitions are by far the most frequent source of innovative knowledge in the Mersin Logistics Cluster. Political administrative organization and business clients follow, almost 40% and 30% of the respondents in the cluster region respectively always or very often receive information relevant for innovation from these two sources. R&D institutions and universities rank last and are evaluated as less relevant sources by the respondents of the online-questionnaire.

6 Conclusion of the Analysis and Future Outlook for a Joint Action Plan

The present cluster report has analyzed five European logistics gateways or clusters along the quality of their regional business environment, their networking and cooperation structures and their specific context for innovation. In the course of the analysis, the competitive profile of the clusters revealed their regional strengths, weaknesses, challenges and trends and led to assumptions about potential recommendations for action. These fields for action are often times shared among the clusters, laying the foundation for a Joint Action Plan of projects and topic areas of common interest.

The present chapter gives a final conclusion on the analysis of each cluster, working towards their joint project areas and fields of action and a brief outline of the project plan for the consecutive work package of the definition of a Joint Action Plan.

Netherlands South West & Flanders Cluster

By far, the most important strength is the key position of the cluster as a gateway to Central Europe. From a global perspective, a major stream of the movement of goods from the Far East, South America or the US is directed via maritime or air gateways located in the cluster. This obviously leads to a variety of activities of transportation, warehousing, value added services and logistics support. Given the unique location attributes, the attractiveness as a market for logistics is clear. A large number of logistics companies are active in the region with emphasis on European and regional distribution centres, where goods are not only received and stocked but also where diverse value added service are taking place, requiring all types of logistics competencies.

Another key element of the cluster is its broad intermodal infrastructure, which is becoming vital to enable its function as a gateway to Europe. Also, an intense competition in the regional cluster can be witnessed, which leads to competitive companies with very high service levels for the customers. As a result of this competitive environment and the availability of a large logistics market, the sector shows a high degree of professionalism and works on innovative projects both in the area of processes as well as in technological advancement. All major multinational logistics companies are actively present in the regional cluster as they have discovered the unique advantages of the region. Without any doubt, the good performance of companies can only be delivered based on an excellently motivated and multilingual workforce and this is available in the cluster. Regional logistics is a complex sector operating in a diverse global and multicultural environment in a 24/7 continuous way. The regionally evident logistics expertise and know-how, which has been built up in a long tradition of logistics activities, implies that the cluster is an ideal location for setting up and implementing the role as orchestrator of the movements of goods and information into Europe.

Although the list of strengths from the interviews and the online-survey is quite impressive, the results revealed a number of weaknesses that need to be addressed. First of all, there appears to be no clear regional strategy concerning logistics. Companies are missing the vision from the government that states the mission and objectives of the region in an unequivocal way. This absence of a clear vision leads to a lack of direction and often disperse and conflicting views and messages at the different levels of authority. Even misplaced competition between public parties is taking place. The business would benefit clearly if a long term strategy was formulated and communicated in a broad sense. Additionally, in the day-to-day working environment, there is still a lot of bureaucracy in the trans-border transport activities. For example, there are interregional weaknesses in terms of cooperation and standardisation in the customs area.

A further weakness is the financing of innovation projects. This is specifically true for small and medium-sized companies, where the lack of people, time and especially money is often hindering to the participation in innovation projects. If the region wants to remain a leading edge cluster, innovative projects need to be undertaken and financed in a proper way. Another weakness comes from a different angle and points out that there is not enough support for leading firms; in other words, there is not sufficient effort to strengthening the strong. This is clearly a viewpoint that believes that if there is sufficient strong support for the leading companies, this will also be beneficial for the smaller followers in the logistics sector.

Finally, a weakness that cannot be overemphasised is the negative image of the sector that acts as a barrier for attracting young motivated employees. Without a broad mental support, the sector will suffer in the longer term. Fewer students will be interested in studying logistics and this circumstance will have a detrimental impact on the prospects of the business. With an overall negative image, the list of strengths will be in danger, as without correct focus on the image, a lot of dominos will fall. On top of that, other emerging competitive regions will not hesitate to try to take up the leading position that the regional cluster is enjoying today.

Rhein-Main Region

The Rhein-Main Region especially benefits from its geostrategic location in Europe, with an advanced multi-modal transportation and digital infrastructure and the best international accessibility. The cluster functions as a European transportation hub with access to the main European transport corridors from north to south and east to west. One of the main competitive strengths of the cluster region remains to be Frankfurt Airport as one of the European air transportation hubs in cargo and passengers and among the leading airports of Europe. Other transport modes are constantly developing, making Rhein-Main a multimodal logistics gateway on the continent and worldwide. Moreover, Rhein-Main has been presented as the cluster with the highest logistics employment concentration of all project clusters and highly above EU average, making the region a leading job engine for logistics in Europe.

The regional diversity of the industrial core has proven to be another competitive advantage. Regional economic prosperity is based on a broad cluster presence with a variety of locally present industry clusters. This also holds true for the logistics sector. The sector in the cluster is highly diversified, with all core industries and many peripheral logistics-related sectors present in the cluster. SMEs and larger companies alike drive economic development and innovation in the cluster region. The cluster enjoys high market attractiveness for the logistics and logistics-related sector. It is an important hub for logistics in the present, with high growth potentials in the future.

Among the weaknesses and challenges to tackle in the future are factors that have already been brought to the attention of the economic, scientific and political agenda in the cluster. The shortage of real estate and the lack of logistics-oriented land use planning are one of the major challenges for logistics infrastructure in the cluster. Space in the urban core of the cluster is becoming scarce and a new approach to infrastructure planning and more efficient usage of it is required. Another weakness is the poor public image and visibility of the logistics sector, especially near the airport. This leads to a lower acceptance of logistics (infrastructure) projects in the cluster and is also a barrier to human resource development.

Indeed, the skilled labour force shortage and the improvable training situation within the logistics sector is another major issue for cluster actors. Even though the educational landscape is broad, logistics is still perceived to lack qualified human resources in certain employment fields of logistics. The sector is not as attractive as it could be, marketing its importance for the economy

and society as a whole. These common problems could be solved by internally networking the cluster and working on joint solutions; yet, there is only a slow beginning of networking and cooperation between actors from politics, economy and science which needs to be intensified and tailored to topic and project trends in the cluster in future. Also, cross-border coordination and project funding between the federal states that the cluster is spanning is oftentimes hindering to the public funding of innovation activities. The high cost of doing business index additionally burdens the attractiveness of the cluster as a place of living and targeting company investments.

Region of Aragón

The Region of Aragón is an important location for the logistics and related sectors, both in the present and the future, due to its geostrategic location, the existing logistics infrastructures, a favourable business environment, attractive markets and high industrial efficiency. The region has an improving and favourable competitive position, among the top five logistics regions in Spain, but it faces the challenge of developing and strengthening its position as a logistics hub worldwide. An increase in the road transport volumes has been detected although the region has a substantial higher competitive advantage and potential in rail and air transport. Although the cargo volume in road transport is superior in the region compared to other transport modes, Aragón exceeds the European average in terms of volume sent and received to and from other European regions by rail. The logistics sector is therefore expected to experience a high future growth in the region and Aragón expects future economic recovery, partially through the improvement of logistics technologies and services, especially for air and rail transport, and continuous innovation in management and production.

The predominant industrial sector in the region, which is characterized by a high population of SME's, is the automobile industry, although companies in almost all of the different logistics areas are present in the region. Nevertheless, the employment concentration in the transportation and storage sector in Aragón is below the EU average. All primary and secondary business activities of the logistics companies are present locally although there is a deficiency of R&D departments. An intense competition in the logistics sector and a fragmentation of transport companies has been identified, as five of the most important road transportation companies in Spain are located in the region as well as a large number of small carriers.

Generally, the Aragónese industry lacks cooperation with European partners and even the collaboration with different local industries is considered low. Nonetheless, a high cooperation among land transport and warehousing as well as air transport and water transport is demonstrated. The local industry shows a growing interest in participating in R&D projects to absorb more knowledge and innovation. Increasing or maintaining market share is the most important driver for innovation although the cost of innovation and the lack, or uncertainty, of customer demand is a barrier to carrying out the same. Currently, more than 70 projects in the area of logistics innovation have been identified in the region and cost efficiency, quality and strategy for regional companies are seen as future fields of action.

Although the region offers faster loans and more diversified funding sources, higher financial support with the provision of public funding is needed. Though the analysis shows public and governmental support for logistics development and innovation - especially for R&D, ICT and training - an improvement is needed in the support structure. Such support is already emerging with the creation of new cluster initiatives, such as ALIA, IDiA and CAAR, that can improve the coordination between different institutions related to the sector. Also, the regional government has recently initiated the elaboration of a research and innovation Smart Specialisation Strategy (RIS3) that expects to build upon the regional feedback of SoCool@EU. Logistics is one of the sectors to be supported under the new regional policies.

A variety of educational institutions, such as training institutes, universities, business schools and R&D centres, are present in the region and as a result, the general educational level is above the national average. Moreover, the Aragónese industry indicates the importance of highly skilled labour for the economic success of the region. Attracting highly skilled labour may be favoured by the high quality of life, the high purchasing power in the region and the fact that Zaragoza is one of the main economic, commercial and university cities of Spain.

Øresund Region

The Øresund Region is a knowledge-intensive region. This strength is reflected in the number of universities and students. There are a total of 12 universities in the region with around 165,000 students. Despite that fact, many participants in the survey point out that R&D and research facilities in general are rather irrelevant as a factor of regional quality, which would be inconsistent with the knowledge society previously assumed. However, this phenomenon can be explained by the R&D function being underrepresented within the responding companies and thus leading to the assumption. Another important point from the analysis is that the cluster needs more skilled labour force. Not only in terms of university graduates, who are recognised as sufficient, but also in terms of vocational graduates.

A heavily discussed topic during the analysis was if the Øresund Cluster actually is a logistics cluster. The cluster has been defined and agreed upon before the actual analysis began. However, it is important to recognise that the definition of the cluster can lead to a bias, since it can be argued that there is a lack of cooperation between the Danish and Swedish part of the cluster. The strengths are very diverse in terms of nationality. For instance, the Danish part of the region is a strong player within air transportation and maritime logistics. From a Swedish point of view, these are not the strongest regional types of logistics. In fact, the Swedish part of the Øresund Region is a strong player in railway transport and has almost no activity within air transportation. Consequently, it is crucial to be aware of how the participants saw the Øresund Region in terms of their nationality in the discussion. This was further illustrated by participants arguing how the findings did not correspond to their specific part of the cluster region.

A central weakness or challenge is also the current railway system in Øresund. At the moment, the system is not sufficient for the demand, especially considering that it is one of the goals for the region to shift transportation from road to railway in terms of achieving more sustainable logistics. The Øresund Bridge is considered as a central infrastructure bottleneck of the region where the limit of capacity is reached. Participants in the analysis mentioned that at present, there are only two hours at night where there is vacant capacity. One solution could be a higher degree of cooperation between the competing firms. The competitive environment can cause even larger capacity problems if the occupied capacity is not fully made use of. Furthermore, in order to ensure cluster efficiency in the future, it is needed to identify all other current and future bottlenecks in the region in order to avoid and prevent capacity problems. The efficient use of infrastructure is pivotal. Additionally, an expansion of the railway system, a shuttle train for instance, can encourage a greener development of the logistics sector in Øresund and thereby Europe in general.

The analysis also shows the significance of a differentiation between the different logistics sectors within the analysis, since the answer behaviour between the different sub-sectors differs a lot most likely. Obviously, the Øresund Region is not yet fully integrated and a presumably distorted picture of the analysis should not be drawn prematurely.

Mersin Logistics Cluster

The analysis has shown that one of Mersin's major competitive advantages is the international port enjoying the benefits of an active Free Trade Zone with its own pier, a relatively advanced transport infrastructure with a good international accessibility and significant potentials for proper transit carriages. The port is closely situated to the Middle East, such as to the Ports of Syria, Lebanon and Israel, and it serves as a transfer port with sufficient import and export loading capacity. The cluster features in its hinterland certain cities with foreign trade capacities, having effective links through both road and railway facilities and being granted with an exceptional climate enabling logistics activities in all seasons. Mersin accommodates a well-trained and well-equipped work force that is sufficiently oriented internationally and able to communicate at least in one foreign language. The area is host to an own university, Mersin University, with a Logistics Research Centre, which offers well-planned education and training programs adopted to provide the industry with qualified staff. The cluster capitalizes on the national and regional economic growth, with an increasing amount of export and import volumes and high availability of cheap labour.

The Mersin Logistics Cluster provides for an investor-friendly environment with a prospect to continue as such. A Logistics Village is planned to be established in Mersin and large parts of investments are expected to be made in the harbour. After the privatization of the Port of Mersin, a significant productivity increase is expected. An international airport, Çukurova, is furthermore planned to be constructed soon, along with a proposal for a new Free Zone Law as part of the political agenda. The regional open-mindedness with favourable and friendly attitudes welcomes all domestic and foreign investors.

Among the weaknesses is the low demand for logistics research leading to low levels of research-driven logistics innovation. The analysis has revealed that in many areas there was a lack of skilled labour force with an increasing difficulty to especially find experienced personnel for middle management level in the logistics sector. The absence of a culture of working together along with insufficient collaboration among institutions is a further weakness. With regard to infrastructure, the digital infrastructure is insufficient, as is the physical infrastructure of railroads and the signal system. In the current structure, the productivity of the Mersin Port is low, through old equipment, a lack of infrastructure, low automation rates, untidy port traffic and insufficient port storage fields. In similar dire is Adana Airport, suffering from insufficient loading and unloading equipments, capacity and warehouses. Also of competitive disadvantage are the relatively high business expenses, the envisioned restrictions by parts of the Mersin Free Trade Zone Laws (double taxation) and the low and slow customs operation services.

Further challenges are the availability of land and property as a threat for investment in the future, environmental and security issues with the growth of unplanned oil storage fields jammed in the Harbor Port of Entry and the harmonization of city traffic with port traffic. Similarly, energy supply and cost for logistics are a challenge, as are the increase in the number of uneducated people because of extensive immigration flow and the difficulties arising with the compliance of regional, national and European law and regulations.

Finally, Mersin is confronted with the future challenge of long-term strategic cluster development in logistics and transport as mentoring region. Activities need to be initiated to make the Mersin Logistics Cluster tap into the knowledge of the other clusters in the project and across Europe. The dialogue and exchange need to be fortified in order to capitalize on the advantageous preconditions set in the cluster.

Outlook Joint Action Plan: Integration of research agendas of actors in regional clusters

Based on the analysis and the detailed overview of the state of play per cluster, a variety of common project fields and recommendations for action could be detected which will be further complemented and elaborated on in a Joint Action Plan in the subsequent work package. This Plan will contain specific joint projects and activities describing the overall strategy to drive sustainable economic development through research and technological development and innovation activities between the clusters. The analysis - especially with the interviews and the online-survey – has uncovered relevant project fields and conceivable topic areas to include in developing a Joint Action Plan.

Among the most important identified needs for action in every cluster, based on which projects could be developed, were the areas listed in the following disquisition. The procedure and time plan of the development of the Joint Action Plan will be explained subsequently:

Development of multimodal infrastructure and optimization of existing infrastructure usage

The analysis has revealed that infrastructure questions are among the most urgent challenges to solve when it comes to a competitive and sustainable logistics in future. Not only is it of vital significance to identify current bottlenecks but to develop new infrastructures accordingly and make efficient use of existing infrastructure. Solutions need to be developed in a Europe-wide infrastructure project with the individual infrastructure competencies of the cluster been taken into account when uncovering synergies.

Improvement of the image of the sector

The poor public image of the logistics and transport sector still hinders the acquisition and retaining of young talented logistics and supply chain management professionals. Also, it endangers the acceptance of public infrastructure projects. The clusters will work in the Joint Action Plan towards the improvement of the sector image, devising tailored instruments such as image campaigns and other awareness-raising activities.

Development of human resource capacities by joint (graduate/vocational) education programs, especially with regards to skilled labour in logistics and transport

One of the most obvious competitive disadvantages in all clusters was the shortage of skilled labour in logistics and transport. Labour demand is still higher than supply in many employment areas of the sector. Projects are needed that identify the labour bottlenecks in the clusters and that nurture the development of tailored education programs (vocational and university) in the clusters. A project could bring theory and practice closer together in regional education dialogues.

Development of logistics real estate and optimization of land use planning

The scarcity of property and land is a key preventer of company investments in the clusters. A variety of interview experts threatened to shift investments from the clusters into other communities if real estate and land use planning no longer served their needs and interests. Input is needed for more investor-oriented policy making and better process of coordination of planning. A dialogue between public authorities and companies could be a first step.

European networking and cooperation between logistics (research) institutions, i.e. development and sharing of development agendas

The Joint Action Plan should provide for a project or activities that allow the better networking between European logistics (research) institutions. Better communication among these institutions should lead to the development of a shared vision with joint research agendas. The creation of an exchange program and subsequent research dialogue could be a point to start with in this urgent field of cluster internationalization.

Setting up European best practice and knowledge exchange by Europe-wide panels of workshops/ think tanks on logistics and transport topics

Logistics and transport are fast-moving and more and more innovation-intensive sectors. Trends and topics, such as infrastructures, technologies, processes, sustainability issues etc. are constantly evolving and demand a European dialogue to jointly work on common projects of interest. The consortium could think of establishing European best practice and knowledge exchange by creating workshop and think series as dialogue platforms and innovation circles.

Developing research capacities around smart ICT technologies, such as Tracking & Tracing, Single Logistics Window in the Chain and real-time identification technologies

Information and communication technologies remain one of the most important related sectors of logistics. Research in this area needs to be endowed with a logistics focus more than currently occurring. Research capacities should be built up based on an intensified networking between industry and the research sector in the topic. More than often, research was not as close to practical ICT problems as hoped by company experts. A solution is needed that avoids isolated application in the chain.

Development of green corridors along a European growth strategy on a multi-modal basis

The interconnection of European logistics gateways cannot happen without at the expense of the environment if logistics hubs do not work conjointly on corridor development. The project clusters opt for developing green corridors to which they connect their cluster to and for cooperating with existing corridor projects, such as Code 24. In the long-term perspective, activities need to be targeted to developing a European growth strategy for corridors based on multi-modal infrastructures.

Development and application of green technologies and measuring environmental impact as part of logistics competitiveness

The analysis has shown that the development of green technologies remains a priority in the innovation agenda. Actors in all clusters agree on the urgency to drive sustainability by improving environmental performance and efficiency of transport and logistics. Fossil-free transport through e-mobility is one example. Also required are activities that target the measurement of environmental impact, such as green indicator development, which is just at the beginning and the involvement in the development of EU standards for accounting costs of sustainability for all transport modes and EU-wide.

Improvements of statistics indicators for cluster analysis and cluster management and integration into international cluster research

The data availability check within the project clusters has revealed that often times, data is only irregularly available with partially huge data gaps, depending on the level of analysis. Also, replies from the regional statistics institutes showed that data is collected on completely different levels or based on different national categorizations (e.g. employment code and classification). Statistics indicators need to be developed and collected that allow a more comparable view on cluster performance. Activities in that direction should complement the cluster research going on in Europe (e.g. the European Cluster Observatory) and should be integrated into these research efforts. Similar to the European Cluster Observatory, there could be a Logistics Competitiveness Index created in order to analyze and manage logistics clusters based on harmonized statistics.

Expanding the analysis of the present report to whole Europe

Finally, the present analysis unfolds its full potential if the results are matched with all logistics and transport clusters and regions across Europe. One joint action could be to apply the instruments from the present report to all of Europe in order to have a more complete and comparable picture.

Next systematic steps towards a Joint Action Plan

In order to derive a Joint Action Plan for the clusters in the course of the subsequent work package, several systematic steps are needed as a precondition for an elaborated cooperation strategy. The according procedure is shown in Figure 73 and might be subject to change:

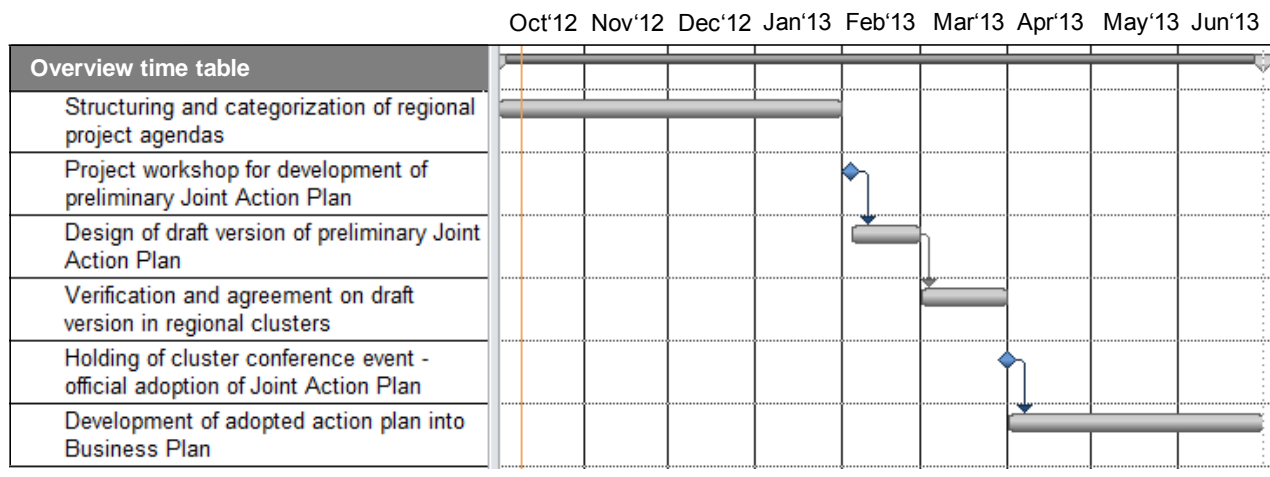


Figure 73 Systematic and time table towards a Joint Action Plan

Source: Own illustration, 2012.

The project agendas or landscapes within the clusters, which were drawn from the present analysis especially through the expert interviews, the meta-analysis and the workshops, will be re-ordered, structured and categorized until the end of January 2013. This will presumably be achieved by completing profile templates for the different project fields in the clusters that were identified in the analysis. These templates answer the problem definition and objectives, activities, roles and participants as well as the resources needed to tackle the identified needs for action. Additionally, the templates will most likely answer the impact that is expected from the initialization and implementation of the potential projects.

The current planning status assumes that the consortium partners will hold a 2-day workshop to conjointly develop a preliminary joint action program at the beginning of February. The workshop discussion will be based on the template material collected by then and will lead to clearly structured and specific outcomes which will be developed into a draft version of a Joint Action Plan until the end of February.

Subsequently, all consortium partners will reflect the draft version with their regional stakeholders in the clusters until the end of March. This plausibility check will generate an updated version of the Joint Action Plan which is then subject to official adoption at the public EU cluster conference in spring 2013 as part of the work program of this project.

The officially adopted version of a Joint Action Plan can finally be developed into a Business Plan until June 2013 as the end of the work package.

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8 Appendix

8.1 Online-questionnaire – Responding Companies

Type of responding companies	Netherlands South West/ Flanders Cluster	Rhein-Main Region	Region of Aragón	Øresund Region	Mersin Logistics Cluster
By sector in logistics (% of answers/number of answers)	n=158 (multiple choice)	n=66 (multiple choice)	n=52 (multiple choice)	n=51 (multiple choice)	n=24 (multiple choice)
Land transport	20%	28%	46%	25%	83%
Air transport	20%	8%	8%	16%	17%
Water transport	8%	11%	13%	27%	58%
Warehousing and support activities for transportation	27%	35%	37%	14%	25%
Postal and courier activities	9%	2%	8%	4%	0%
Repair and maintenance of transport equipment	5%	3%	4%	2%	4%
Manufacture of transport equipment	0%	1%	2%	4%	4%
Manufacture of other equipment	3%	6%	4%	20%	0%
Information & Communication Technologies (ICT)	12%	13%	8%	2%	0%
Wholesale and retail trade	8%	11%	10%	14%	0%
Renting and leasing of transport equipment	2%	3%	2%	0%	0%
Waste collection, treatment & disposal; materials recovery	0%	3%	2%	4%	0%
Consultancy services	26%	24%	15%	2%	0%
Other	17%	23%	25%	16%	42%
By approx. turnover per year (% of answers/number of answers)	n=77	n=42	n=35	n=37	n=22
€ 50 Mio & more	40%	33%	43%	41%	0%
€ 10 to 50 Mio	27%	19%	9%	41%	32%
€ 2 to 10 Mio	12%	24%	29%	7%	50%
€ 0.5 to 2 Mio	6%	12%	11%	7%	14%
€ 0 to 0.5 Mio	14%	12%	9%	4%	5%
By employee number (% of answers/number of answers)	n=77	n=44	n=37	n=28	n=23
1,000 & more	39%	27%	35%	29%	0%
250 to 999	10%	7%	19%	29%	30%
50 to 249	26%	25%	16%	32%	30%
10 to 49	14%	27%	19%	11%	26%
1 to 9	10%	14%	11%	0%	13%
Single person enterprise	0%	0%	0%	0%	0%

Source: Own, data basis online-survey, 2012.

8.2 Online-questionnaire – Tables

Netherlands South West & Flanders Cluster

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
International accessibility	104	4,2	0,4	0,6	0,8
Transport infrastructure	104	3,9	0,5	0,7	0,8
Digital infrastructure	99	3,7	0,5	0,7	0,8
Access to capital market	97	3,3	0,5	0,7	0,5
Cost of doing business, business expenses	100	3,0	0,8	0,9	0,7
Availability of property and land	101	3,3	0,7	0,9	0,4
Research facilities	96	3,5	0,7	0,9	0,5
Availability of labour	93	3,1	0,8	0,9	0,6
Intellectual property and patent rights protection	75	3,3	0,5	0,7	0,4

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Temporary staff	94	3,3	0,6	0,8	0,7
Unskilled labour force	90	3,3	1,0	1,0	0,5
Skilled labour force	93	2,9	0,9	0,9	0,8
University graduates (Business and Social Science Degree)	95	3,2	0,7	0,9	0,7
University graduates (Technical Degree)	91	3,0	0,9	0,9	0,5

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Attractive domestic market	99	3,4	0,5	0,7	0,6
Transparency of the market	98	3,5	0,4	0,6	0,7
Globalization of the market	97	3,8	0,8	0,9	0,7
Sophistication of customer demand	95	3,5	0,6	0,8	0,7

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Innovation climate	99	3,4	0,8	0,9	0,7
Image of your sector	101	3,3	0,8	0,9	0,7
Overall business conduct	98	3,7	0,3	0,6	0,8
Trustful cooperation	94	3,5	0,8	0,9	0,5
Business foundation and start-up dynamism	95	3,2	0,6	0,8	0,4
Intense competition	96	3,6	0,9	0,9	0,6
Strategic thinking of companies	96	3,4	0,6	0,8	0,8
Differentiation in your sector	96	3,3	0,8	0,9	0,7
Flexibility of regional companies with changes and challenges	96	3,4	0,5	0,7	0,7
Cost efficiency of regional companies	96	3,3	0,6	0,8	0,7
Quality awareness of regional companies	95	3,5	0,6	0,8	0,7

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Foundation of new businesses	89	3,2	0,8	0,9	0,5
Knowledge and technology transfer	89	3,2	0,8	0,9	0,7
Export promotion and international market access	92	3,2	0,7	0,9	0,6
Research & Development and innovation activities	92	3,3	0,8	0,9	0,6
Provision of public funding	91	2,9	0,7	0,8	0,4
Organization of sector-specific events	91	3,3	0,8	0,9	0,6
Creation of sector-specific initiatives and networks	93	3,4	0,9	1,0	0,8
Cooperation between firms and research institutes	81	3,4	0,7	0,9	0,8

Rhein-Main Region

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
International accessibility	57	4,9	0,1	0,3	0,7
Transport infrastructure	57	4,4	0,5	0,7	0,9
Digital infrastructure	56	4,2	0,4	0,6	0,8
Access to capital market	54	4,0	0,8	0,9	0,5
Cost of doing business, business expenses	56	2,8	0,6	0,8	0,8
Availability of property and land	56	3,1	0,7	0,9	0,5
Research facilities	55	3,6	0,6	0,8	0,4
Availability of labour	54	3,1	1,0	1,0	0,6
Intellectual property and patent rights protection	45	3,4	0,5	0,7	0,4

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Temporary staff	54	3,2	0,8	0,9	0,4
Unskilled labour force	51	3,2	0,8	0,9	0,3
Skilled labour force	54	2,6	1,2	1,1	0,8
University graduates (Business/Social Science Degree)	55	3,3	1,0	1,0	0,7
University graduates (Technical Degree)	54	3,0	1,2	1,1	0,6

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Attractive domestic market	55	3,8	0,8	0,9	0,8
Transparency of the market	54	3,6	0,6	0,8	0,7
Globalization of the market	54	3,9	0,8	0,9	0,8
Sophistication of customer demand	55	4,1	0,5	0,7	0,8

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Innovation climate	55	3,5	0,8	0,9	0,6
Image of your sector	55	3,3	0,8	0,9	0,8
Overall business conduct	54	3,6	0,3	0,5	0,7
Trustful cooperation	52	3,3	0,5	0,7	0,7
Business foundation and start-up dynamism	52	3,5	0,7	0,8	0,3
Intense competition	54	4,0	0,6	0,7	0,8
Strategic thinking of companies	53	3,6	0,5	0,7	0,8
Differentiation in your sector	53	3,6	0,7	0,9	0,5
Flexibility of regional companies	54	3,4	0,6	0,8	0,7
Cost efficiency of regional companies	55	3,5	0,7	0,8	0,8
Quality awareness of regional companies	55	3,9	0,6	0,8	0,8

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Foundation of new businesses	49	3,2	0,6	0,7	0,3
Knowledge and technology transfer	52	3,5	0,9	1,0	0,7
Export promotion and international market access	53	3,4	0,9	0,9	0,6
Research & Development and innovation activities	53	3,3	0,7	0,9	0,5
Provision of public funding	53	2,9	0,7	0,8	0,6
Organization of sector-specific events	53	3,5	0,9	0,9	0,7
Creation of sector-specific initiatives and networks	52	3,5	1,1	1,0	0,8
Cooperation between firms and research institutes	47	3,5	0,7	0,8	0,7

Region of Aragón

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
International accessibility	44	3,3	0,8	0,9	0,6
Transport infrastructure	44	3,5	0,8	0,9	0,8
Digital infrastructure	43	3,4	0,5	0,7	0,6
Access to capital market	40	3,0	0,3	0,6	0,5
Cost of doing business, business expenses	39	3,2	0,7	0,9	0,6
Availability of property and land	41	3,8	0,3	0,6	0,5
Research facilities	41	3,4	0,6	0,8	0,6
Availability of labour	41	3,8	0,6	0,8	0,7
Intellectual property and patent rights protection	39	3,3	0,3	0,5	0,4

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Temporary staff	41	3,7	0,5	0,7	0,5
Unskilled labour force	41	3,7	0,6	0,8	0,4
Skilled labour force	39	3,6	1,0	1,0	0,8
University graduates (Business and Social Science Degree)	42	4,0	0,4	0,6	0,7
University graduates (Technical Degree)	41	4,0	0,6	0,8	0,8

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Attractive domestic market	41	3,1	1,2	1,1	0,7
Transparency of the market	41	3,2	0,6	0,8	0,7
Globalization of the market	40	3,7	0,7	0,8	0,8
Sophistication of customer demand	41	3,3	0,8	0,9	0,8

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Innovation climate	40	3,5	0,6	0,8	0,6
Image of your sector	42	3,5	0,7	0,8	0,8
Overall business conduct	41	3,4	0,7	0,9	0,8
Trustful cooperation	40	3,3	0,8	0,9	0,6
Business foundation and start-up dynamism	39	3,4	0,3	0,5	0,6
Intense competition	41	3,8	0,7	0,8	0,8
Strategic thinking of companies	41	3,4	0,7	0,8	0,8
Differentiation in your sector	41	3,3	0,8	0,9	0,6
Flexibility of regional companies with changes and challenges	41	3,3	1,1	1,1	0,7
Cost efficiency of regional companies	41	3,3	0,7	0,8	0,9
Quality awareness of regional companies	41	3,4	0,9	1,0	0,8

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Foundation of new businesses	40	2,7	0,8	0,9	0,7
Knowledge and technology transfer	40	3,0	0,9	0,9	0,7
Export promotion and international market access	40	2,9	0,7	0,8	0,5
Research & Development and innovation activities	40	3,1	0,9	0,9	0,6
Provision of public funding	39	2,5	0,6	0,8	0,6
Organization of sector-specific events	40	3,5	0,9	0,9	0,6
Creation of sector-specific initiatives and networks	41	3,2	0,8	0,9	0,6
Cooperation between firms and research institutes	39	3,4	0,6	0,8	0,7

Øresund Region

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
International accessibility	38	4,1	0,5	0,7	0,6
Transport infrastructure	38	3,8	0,4	0,7	0,8
Digital infrastructure	33	3,8	0,6	0,8	0,8
Access to capital market	35	3,5	0,6	0,8	0,5
Cost of doing business, business expenses	35	3,0	0,7	0,8	0,7
Availability of property and land	36	3,3	0,7	0,8	0,5
Research facilities	34	3,5	0,5	0,7	0,4
Availability of labour	37	3,3	0,6	0,8	0,7
Intellectual property and patent rights protection	25	3,2	0,2	0,5	0,4

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Temporary staff	37	3,4	0,5	0,7	0,8
Unskilled labour force	36	3,4	0,7	0,9	0,5
Skilled labour force	37	3,0	0,8	0,9	0,9
University graduates (Business and Social Science Degree)	36	3,5	0,4	0,6	0,6
University graduates (Technical Degree)	37	3,2	0,8	0,9	0,7

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Attractive domestic market	37	3,5	0,7	0,8	0,8
Transparency of the market	35	3,5	0,4	0,6	0,8
Globalization of the market	34	3,5	1,0	1,0	0,8
Sophistication of customer demand	37	3,5	0,7	0,8	0,8

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Innovation climate	35	3,6	0,5	0,7	0,7
Image of your sector	35	3,4	0,6	0,8	0,7
Overall business conduct	36	3,7	0,6	0,8	0,8
Trustful cooperation	34	3,6	0,6	0,8	0,7
Business foundation and start-up dynamism	35	3,2	0,6	0,7	0,5
Intense competition	36	4,1	0,7	0,8	0,8
Strategic thinking of companies	35	3,4	0,4	0,6	0,9
Differentiation in your sector	35	3,2	0,7	0,8	0,8
Flexibility of regional companies with changes and challenges	35	3,4	0,3	0,5	0,7
Cost efficiency of regional companies	31	3,2	0,5	0,7	0,6
Quality awareness of regional companies	34	3,3	0,5	0,7	0,8

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Foundation of new businesses	34	3,2	0,5	0,7	0,5
Knowledge and technology transfer	34	3,3	0,6	0,8	0,6
Export promotion and international market access	34	3,3	0,8	0,9	0,6
Research & Development and innovation activities	33	3,2	0,8	0,9	0,5
Provision of public funding	35	2,9	0,8	0,9	0,5
Organization of sector-specific events	34	3,2	1,0	1,0	0,7
Creation of sector-specific initiatives and networks	33	3,3	0,9	1,0	0,7
Cooperation between firms and research institutes	29	3,1	0,7	0,9	0,6

Mersin Logistics Cluster

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
International accessibility	24	4,0	0,6	0,8	1,0
Transport infrastructure	24	3,5	0,7	0,8	0,8
Digital infrastructure	24	3,6	1,2	1,1	0,7
Access to capital market	24	3,5	0,7	0,8	0,8
Cost of doing business, business expenses	24	3,5	0,6	0,8	1,0
Availability of property and land	24	3,9	0,9	0,9	0,8
Research facilities	24	2,5	1,3	1,2	0,4
Availability of labour	23	3,4	1,0	1,0	0,7
Intellectual property and patent rights protection	24	2,2	1,1	1,1	0,3

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Temporary staff	22	1,9	1,3	1,1	0,2
Unskilled labour force	22	3,4	1,0	1,0	0,7
Skilled labour force	23	3,8	1,0	1,0	1,0
University graduates (Business and Social Science Degree)	23	4,2	0,7	0,8	0,9
University graduates (Technical Degree)	23	3,9	1,0	1,0	0,9

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Attractive domestic market	24	4,2	0,6	0,7	1,0
Transparency of the market	24	3,4	1,2	1,1	1,0
Globalization of the market	24	3,8	0,6	0,8	1,0
Sophistication of customer demand	24	4,1	1,2	1,1	1,0

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Innovation climate	24	3,0	1,0	1,0	0,8
Image of your sector	24	4,0	0,5	0,7	1,0
Overall business conduct	24	3,6	0,9	1,0	1,0
Trustful cooperation	24	3,5	0,5	0,7	1,0
Business foundation and start-up dynamism	24	4,0	0,5	0,7	1,0
Intense competition	23	4,7	0,3	0,6	1,0
Strategic thinking of companies	24	3,6	1,4	1,2	1,0
Differentiation in your sector	22	3,0	0,9	0,9	1,0
Flexibility of regional companies with changes and challenges	23	3,5	0,8	0,9	1,0
Cost efficiency of regional companies	24	3,3	0,7	0,8	1,0
Quality awareness of regional companies	23	3,3	1,1	1,0	0,8

Question Item	Answers	Mean	Variance	Standard Deviation	Relevance
Foundation of new businesses	24	2,8	1,1	1,1	0,8
Knowledge and technology transfer	24	2,8	0,8	0,9	0,8
Export promotion and international market access	24	3,3	0,8	0,9	0,9
Research & Development and innovation activities	24	2,3	1,0	1,0	0,7
Provision of public funding	24	2,6	0,8	0,9	0,9
Organization of sector-specific events	23	3,8	1,1	1,0	1,0
Creation of sector-specific initiatives and networks	24	3,4	1,4	1,2	0,9
Cooperation between firms and research institutes	24	2,5	0,9	1,0	0,6