



Integrated capacity building and training programme for DANUBE area labour and business support organisations, local industry and entrepreneurs to enter innovative transnational value CHAINS as PEER-level collaboration partners
DTP3-497-SO1.2

Methodology for integration of existing industry sectors into digital value chains

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Introduction

Challenges caused by digital transformation in the industry and related changes in business models and value chains have tremendous impact on the Danube region countries, particularly on the regional labour markets and the development of human resource qualifications. While in the advanced Danube countries a lack of digital competences threatens innovative SMEs and start-ups by limiting their chances for scale-up and internationalisation, in less developed countries the need for catching up in digital qualification of work force and their employing companies is urgent and crucial for economic development.

In Romania with a DESI score of 36.5 (compared to 52.5 of EU) the transformation of traditional “Low skilled – Low tech” sectors such as textiles, agro-food, is crucial, as GDP contributors and exporting sectors are being faced with the critical decision of becoming smart sectors or dying out.

Bosnia and Herzegovina is affected with a “Brain Drain” and the most negative effects are in the industrial sector, especially metal industry. With a rate of more than 64% youth unemployment in BiH is the highest in Europe. Workforce needs new technology

qualifications and practical education to keep up with the region and Europe as well.

Research done by PP University of Belgrade shows an evident lack of digitally skilled labour in Serbia. Although there is evident need for additional skills in companies, only one-fourth of them organize training programs for employee skills improvement, while about 15% of all surveyed companies have embarked on the process of recruiting individuals with the digital skills.

Creating value - particularly in smaller Danube countries such as Slovenia with limited resources, capacities and capabilities – is largely dependent on intensive investments, high risks, high responsiveness and originality, which can only be achieved through collaboration and deploy their full impact through transnational value-chain integration.

The mapping of Transnational Value Chains provides a visionary goal for the whole project regions that will guide all following project activities, particularly the development and piloting of a value-chain oriented capacity building and training programme and development of action plans for establishing labour-market relevant cooperation links.



Theoretical Considerations

The term of “value chains” has been introduced by Michael Porter in 1985 (Porter, 1985), as a fundamental concept in developing a strategy aimed at increasing the competitiveness level of a company by considering the system of activities involved in the production and consumption of products.

Rather than looking at departments or accounting cost types, Porter's Value Chain focuses on systems, and how inputs are changed into the outputs purchased by consumers. Using this viewpoint, Porter described a chain of activities common to all businesses, and he divided them into primary and support activities.

Primary activities relate directly to the physical creation, sale, maintenance and support of a product or service. They consist of the following:

- **Inbound logistics** – These are all the processes related to receiving, storing, and distributing inputs internally. Your supplier relationships are a key factor in creating value here.
- **Operations** – These are the transformation activities that change inputs into outputs that are sold to customers. Here, your operational systems create value.
- **Outbound logistics** – These activities deliver your product or service to your customer. These are things like collection, storage, and distribution systems, and they may be internal or external to your organization.
- **Marketing and sales** – These are the processes you use to persuade clients to purchase from you instead of your competitors. The benefits you offer, and how well you communicate them, are sources of value here.
- **Service** – These are the activities related to maintaining the value of your product or service to your customers, once it's been purchased.

The support activities support the primary ones described above:

- **Procurement (purchasing)** – This is what the organization does to get the resources it needs to operate. This includes finding vendors and negotiating best prices.
- **Human resource management** – This is how well a company recruits, hires, trains, motivates, rewards, and retains its workers. People are a significant source of value, so businesses can create a clear advantage with good HR practices.
- **Technological development** – These activities relate to managing and processing information, as well as protecting a company's knowledge base. Minimizing information technology costs, staying current with technological advances, and maintaining technical excellence are sources of value creation.



- **Infrastructure** – These are a company's support systems, and the functions that allow it to maintain daily operations. Accounting, legal, administrative, and general management are examples of necessary infrastructure that businesses can use to their advantage.

According to UNIDO (UNIDO, 2011) four partly overlapping approaches can be distinguished in value chain analysis:

a) The strategic management and business administration approaches, which look at supply chain management and development of the individual firm. The focus is often on a) actors that hold important positions in the value chain, particularly buyers of end-products and providers of major inputs; b) the contractual relationships that firms maintain with these buyers and suppliers; c) the logistical services that certain firms are able to provide, e.g., with regard to transport; and d) the level of competitiveness of the chain and its individual actors.

b) The industrial cluster development approaches, which assume that spatial organization, strategic firm alliances, and networking are sources of systemic competitiveness. Their analytical focus is often on: a) how actors network to exchange goods, services, and information; b) institutional and political frameworks that promote building industrial clusters and the inclusion of small-to-medium-sized firms; and c) the level of knowledge and technology used.

c) The global value chain approach, which emphasizes economic returns and governance structures, determined, for example, by the dominance of buyers and retailers operating internationally. Here the analytical focus is mainly on: a) the dynamics of upgrading and value creation; b) power relations in the chain determining how economic gains and risks are distributed among chain actors and how certain actors face barriers of entry; and c) governance and management structures that allow the value chain to function and deal with coordination, competition, and technological improvement.

d) The innovation systems approach, which assumes that access to knowledge and technology and opportunities to use them allow actors to participate in value chains. The analytical focus here is frequently on: a) building individual and collective competences among value chain actors; b) networks of knowledge exchange, joint learning and technology development; and c) the institutional and policy frameworks that create an enabling environment for chain actors to develop and use innovations.



Proposed methodology

In accordance with UNIDO, the proposed methodology takes into consideration the excellence level of clusters, as described by the European Secretariat for Cluster Analysis.

The European Secretariat for Cluster Analysis (ESCA) is the one-stop shop for promoting Cluster Management Excellence through benchmarking and quality labelling of cluster management organisations worldwide.

ESCA is an offspring of the 2009 European Cluster Excellence Initiative (ECEI), a pan-European initiative by the European Commission with the aim to create more world-class clusters across the EU by strengthening cluster management excellence. ESCA was established in November 2010 by one of the 13 European project partners, VDI/VDE Innovation + Technik GmbH.

Step 1: ESCA

Clusters assessed by ESCA are distributed along following sectors:

- Aviation and space;
- Biotechnology;
- Construction/building sector;
- Creative industries and businesses, media, design, financial services;
- Energy and environment;
- Food Industry (non biotech) and Agro Tech;
- Health and medical technologies;
- Information and Communication; Hard/Software;
- Logistics: Packaging, Delivery, Logistical Systems and Services.
- Maritime technologies, water resources, water transport.
- Micro, nano and optical technologies.
- Mobility: Vehicles, rail, traffic systems.
- New Materials and chemistry.
- Production and engineering.
- Textile industries.
- Tourism, Leisure, Sports.

The indicators to be assessed are:

- The number of labelled clusters in a specific sector in the Danube Region, i.e the higher the number, the better the chances to be selected as a targeted value chain in DanubePeerChains;
- The geographical distribution of labelled clusters in a specific sector in the Danube Region; the more there are more countries having



labelled clusters in a specific sector, the better the chances to be selected as a targeted value chain in DanubePeerChains.

Clusters are seen as pillars of the 14 industrial eco-systems for a green, digital and resilient economic recovery, as identified by the European Commission:

- Tourism;
- Creative & Cultural Industries;
- Aerospace & Defence;
- Textiles;
- Electronics;
- Mobility-Automotive;
- Low carbon energy intensive industries;
- Renewable energy;
- Agri Food;
- Health;
- Digital;
- Construction;
- Retail;
- Proximity & Social Economy.

Step 2: The 14 industrial ecosystems

The identified clusters (step 1) will be checked against the correspondence to the 14 industrial ecosystems, in an Yes/No manner.

Step 3: DanubePeer Chains

DanubePeerChains has already pre-identified several sectors: metal industry, machine building, engineering, electro industry, electronics/robotics, ICT), which have already been analysed in terms of labour market (A.T1.1 Capitalisation and upgrade of labour market analysis and identification of regional development demand) and digitalisation (A.T1.2 Transnational mapping of competences in key knowledge fields of digitalization).

The identified clusters (step 1) will be checked against the correspondence to the results of the DanubePeerChains previous analyses.



Step 4: Selection

Selection will be done against the criteria described in Steps 1 to 3. In addition to that a qualitative assessment of the project partners, performed in a peer review manner, will lead to the final decision.

The selection template looks as follows:

| No | Sector according to ESCA | Number in the Danube Region | Countries in the Danube Region | 14 industrial ecosystems | DanubePeerCH aims | Comments |
|----|---|-----------------------------|--------------------------------|--------------------------|-------------------|----------|
| 1 | Aviation and space | | | Yes | | |
| 2 | Biotechnology | | | | | |
| 3 | Construction/building sector | | | Yes | | |
| 4 | Creative industries and businesses, media, design, financial services | | | Yes | | |
| 5 | Energy and environment | | | Yes | | |
| 6 | Food Industry (non biotech) and Agro Tech | | | Yes | | |
| 7 | Health and medical technologies | | | Yes | | |



| | | | | | | |
|----|---|--|--|-----|-----|--|
| 8 | Information and Communication; Hard/Software | | | Yes | Yes | |
| 9 | Logistics: Packaging, Delivery, Logistical Systems and Services | | | | | |
| 10 | Maritime technologies, water resources, water transport | | | | | |
| 11 | Micro, nano and optical technologies | | | | | |
| 12 | Mobility: Vehicles, rail, traffic systems | | | Yes | | |
| 13 | New Materials and chemistry | | | | | |
| 14 | Production and engineering | | | | Yes | |
| 15 | Textile industries | | | Yes | | |
| 16 | Tourism, Leisure, Sports | | | Yes | | |

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