e-book


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# Business Internationalization and Scale up

## A Guide on Business Internationalization and Scale up of Danube Agro-Food Clusters

Interreg
Danube Transnational Programme
Danube S3 Cluster

STEINBEIS 2i

*Maria Kourti, Nathalie da Silva, Clémentine Roth,*
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# Executive Summary

Clusters have an outstanding role to support policy in national and regional development and growth by supporting their affiliated members, including a variety of organization types as SMEs (including startups and scaleups), research intensive firms, food producers, technology providers and academia. Growth is a result of successful internationalization and scale up of activities and businesses, but most of cluster members have in common that for going international, staying competitive on the international markets and scaling their efforts they need to innovate and build competences, skills, assets, markets (strategic knowledge). At the same time, they do not have the resources and the time to do all this within their organization boarders.

Organizations can gain access to strategic knowledge through partnerships and alliances with other organizations if they loosen their organization boarders and interact with their ecosystem. Open Innovation is the ideal approach that empowers the access to strategic knowledge to organizations from the environment and supports a quick and successful internationalisation and scale up.

This handbook hence provides tools and examples for cluster managers and cluster members on how to internationalize and scale up, especially focusing on using strategic partnerships, networking and open innovation to reach these goals. Furthermore, the theoretical framework behind those strategic tools is elaborated.

# 1 Business Internationalization and Scale Up in the Agro-food Sector: An Introduction

**Clusters** play a substantial role in the regional development in the context of the Smart Specialization Strategy of the European Commission. In 2010, the European Cluster Policy Group communicated recommendations stating that "the profiles (...) of cluster programmes need to support Europe's efforts to better achieve its innovation and competitiveness potential a key objective of the Europe 2020 strategy".[1] Competitiveness of Small and Medium Sized Enterprises (SMEs) is one of the 11 thematic objectives of the new cohesion policy and its priorities are to enhance SME competitiveness and growth.[2] Competitive advantage and growth can be achieved by successful internationalization and scale up of organizations' activities and businesses if planned and implemented strategically.

Countries in the **Danube Region** have identified the most promising areas for innovation based on their respective local strengths. Comparing Smart Specialization Strategies (S3) priorities, most of the countries and regions have decided on **agro-food related priorities**, often relating this area to health, environment, bioeconomy, or sustainability. Within their Danube S3 Cluster policy, clusters have "set emphasis on promoting organic farming and bioeconomy and will aim at increasing links between food, farming and health (...)."[3]

**The agro-food sector's** business areas are currently challenged by major technology and market trends. They are calling on agro-food organizations for meeting expectations with new concepts and functionalities of products. Functional and nutraceutical foods for example are increasingly becoming the focus of R&D activities

1 European Cluster Policy Group (2010): Final Recommendations – A Call for Policy Action, http://wbc-inco.net/object/document/7861/attach/ECPG_Final_Report_web-low1.pdf (last access: 22.09.2020).

2 European Commission (n.d.): Priorities for 2014-2020, https://ec.europa.eu/regional_policy/en/policy/how/priorities (last access: 22.09.2020).

3 Danube S3 Cluster (2020): Regional context and cluster innovation potential, http://www.interreg-danube.eu/uploads/media/approved_project_output/0001/39/1a47a515d0abecbadd421ce8c567041ef5b46414.docx (last access: 08.09.2020), p. 17.

in the food industry.[4] At the same time trends are substantial driver for innovation. Traceability – the wish of consumers to know where their food is coming from and how it has made its way to them – initiates innovation processes with other technology fields such as sensor technology in order to achieve added value through product innovation. This again requires a look at the geographic and sector markets in order to evaluate where the demand for such added value is most wanted.

The agro-food sector is classified as low-tech in comparison to other more research-intensive industries, which leads to a perception of low level of innovation. This is based on a classification of the OECD in 1997, that has been widely acknowledged. On this classification the main indicator used is the R&D intensity measured as the ratio of the R&D expenditure to turnover of the organization.[5] However low tech and medium tech industries show innovations with a variety of R&D expenditure level. One reason for this fact is that **innovations** in e.g. the Food & Beverage setor **are based on new technologies as in high-tech activities adopted across "user industries"**. Biotechnologies are an example for this phenomenon where high-tech technologies are used and applied on low-tech industries. The innovativeness of the sector is far not constrained by its R&D expenditure.[6] Other examples are food sharing platforms that support the sharing of local farming products. They act locally but upon high tech technologies from the IT sector.

Technology revolutions, such as in information and communication technology give great opportunities for the traditional agro-food sector to grow nationally and internationally, to scale business models, and to create new valuable solutions to societal challenges. Despite of being a very traditional sector, the agro-food sector is interconnected with several other branches and touches various technology fields. The graph below shows the complexity of the agro-food ecosystem.[7]

4 Medeiros, G., Binotto, E., Caleman, S., & Florindo, T. (2016): Open Innovation in Agrifood Chain: A Systematic Review, Journal of Technology Management & Innovation 11(3), pp. 127–136, DOI: 10.4067/S0718-27242016000300013.

5 Ramirez-Portilla, A., Cagno, E. & Zanatta Alarcón, A. (2016): Open Food – Revisiting Open Innovation in the Food Industry, http://ri.ibero.mx/bitstream/handle/ibero/2574/RPA_Art_04.pdf?sequence=1&isAllowed=y (last access: 31.08.2020).

6 Ibid., p. 5.

7 Kelly, S.J., Bensemann, J., Bhide, V., Eweje, G., Scott, J., Lockhart, J., Taskin, N. & Warren, L. (2017): Disruptive technology in the agri-food sector: An examination of current and future influence on sustainability, bio-security and business effectiveness, Massey University [Commissioned Report], DOI: 10.13140/RG.2.2.19520.02566, p. 9.

By looking at the various factors, key actors, environmental and health causalities involved within the whole value chain, this complexity provides unique opportunities to **turn trends and challenges into innovation**. Understanding the interdependencies opens new geographic and sectoral markets and thus, paths the way to internationalization and scale up of organizations involved with each other.

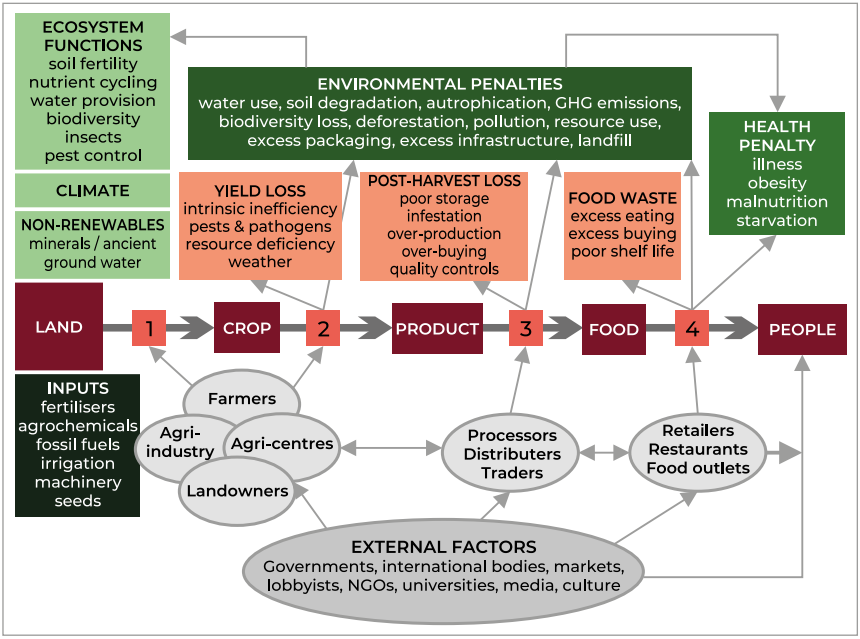



Figure 1: Agro-food ecosystem (Source: Steinbeis 2i GmbH adapted from Horton et al., 2016)

The access to promising enabling technologies must be converted into valuable outputs. As this process can take time, which is of the essence for traditional agro-food organizations, especially SMEs, gaining access to technologies, know-how and markets through partnerships and networks is indispensable. The high and increasing complexity of the innovation process and interrelations in the food sector has made the dependency on **innovation within networks** indispensable.

In order to be ready for the future, clusters and organizations in the agro-food sector must strategically pursue international cooperation and cross-sectoral partnerships. Organizations must do this in order to benefit from technology and market trends with competitive advantages. Clusters must do this in order to position themselves in their broader international environment and support their members in their internationalization and scale up efforts best.

## Background and methodology

The project "Danube S3 Cluster – Transnational Cluster Cooperation active on agro – food, based on Smart Specialization Approach in Danube region" build the framework for this handbook. The project's main objective is to leverage the **innovation-driven entrepreneurial ecosystem** in the Danube area by developing smart and coordinated cluster policies in the context of RIS3, to enhance innovation management knowledge and skills and foster transnational cluster cooperation in agro-Food sector. To reach this goal, the project aims to prepare and deliver a joint training program which focuses on the business and innovation management issues and tackles the territorial challenge of lack of innovation knowledge and internationalization of SMEs.

## Purpose and concept of the handbook

This handbook will be the basis for the concept of training sessions and formats. The trainings have the aim to give to cluster managers as well as to their cluster member organizations hands on knowledge on how to shape their activities around internationalization and scale up and will equip them with tools, ideas and concepts to plan further actions, initiatives, trainings and activities to define their internationalization and scale up strategies.

The handbook addresses **agro-food clusters of the Danube Region** as well as **member organizations of agro-food clusters of the Danube Region**. These consist of all types of organization such as Small and Medium sized enterprises (SMEs), research institutes, universities, research intensive firms, local and regional public authorities, food manufacturers, technology providers, farmers and farmer associations.

The concept is a methodology that enables to keep in mind all above aspects and follows the principle idea that the concept of Open Innovation (OI) is most suitable to enable internationalization and scaleup by keeping in mind trends and technology. Barriers for internationalization and scaleup are needs that can be addressed by partnerships and strategic alliances. OI is the most suitable starting point to plan and implement steps towards building strategic partnerships and networks in order to internationalize and scale up. Core assumption is that partnerships and networks are the main enabler for benefitting fully of the strategic knowledge that again paths the way for internationalization and scale up.

The handbook will introduce to cluster managers and cluster members this mindset and give them

- Hands on tools and methodologies to identify "the right" partnerships that will add on their internationalization and scaleup,
- Inspiration and ideas on how to plan initiatives and activities to encourage partnerships according to the OI concept.

## Structure of the handbook

The handbook will give in the first part an overview of policy and cluster aspects and roles in internationalization and scale up and theoretical background and innovation principles around them (chapters 2–4). The second part introduces a practical methodology for strategy creation (chapter 5). The third part presents examples and best practices for network building for internationalization and scale up (chapter 6).

More specifically the chapters are as follows:

- Chapter 2: core principles and definitions will put up a framework on the terms internationalization and scale up.
- Chapter 3: policy has the role to formulate supporting frameworks for the internationalization and scale up of organizations and thus support the national and regional growth. Clusters are a motor to organizations' growth and need guidance in supporting organizations in their very specific needs. In order to

fulfil these challenges, in the beginning, the barriers to go international and to scale up have to be identified. These are equivalent to the needs for internationalization and scale up.

- Chapter 4: Internationalization and scale up are interconnected with each other. Moreover, they are interconnected with innovation. Internationalization activities influence innovation in organizations and vice versa. Scale up attempts inspire product and business model innovation and vice versa. OI suggests a way for accessing and exploiting knowledge necessary for going international and to scale up. The key to access this knowledge are partnerships and networks.
- Chapter 5: introduces a methodology backed up with a set of tools that give to organizations as well as clusters the support they need to formulate their strategies for internationalization and scale up. Chapter 6: will give to cluster managers and administrative stakeholders perspectives and ideas for how to conceptualize initiatives for building networks for their members but also how to shape support programmes and services.

# 2 Definitions and Principles

## 2.1 Internationalization

According to the Global Policy Forum "**Internationalization** refers to the increasing importance of international trade, international relations, treaties, alliances, etc. International, of course, means between or among nations".[8]

**Modes of internationalization**[9] describe how organizations become international. Mainly the following six ways are commonly used to define this. They are not gradually, and the point of entry can happen on any level.

8 Daly, H.E. (1999): Globalization Versus Internationalization, GPF Global Policy Forum, https://www.globalpolicy.org/component/content/article/162/27995.html (last access: 31.08.2020).

9 Masum, M.I. & Fernandez, A. (2008): Internationalization Process of SMEs: Strategies and Methods, https://www.diva-portal.org/smash/get/diva2:121500/FULLTEXT01.pdf (last access: 31.08.2020), p. 8.

- **Exporting** is the main internationalization mode especially for SMEs as it is the least risky and does not require costs like manufacturing in the foreign market
- **Turnkey projects** describe projects where two entities put up a plant or equipment together in a foreign market. This mode applies usually to certain branches such as construction, petrochemical refining, chemicals or pharmaceutical
- **Licencing** describes an agreement between entities where the licensor grants rights over property over a period of time and in return he receives a loyalty fee from the licence. This applies in industries where patents and formulas are common, such as pharmaceuticals.
- **Franchising** describes the granting of a long-term right by one firm to another to sell a product or service under the name of the first.
- **Joint ventures** describe the formation of a new entity by two or more independent entities, sharing costs and risks
- **Wholly owned subsidiaries** describe new formed subsidiaries where the firm owns the entire stock

While internationalization is largely emphasized by cross-border trade and export through the above modes, it encompasses much more than these activities. The internationalization of research and development activities (R&D) for example, is moving fast today because innovation processes in general are speeding up: "The internationalisation of R&D is part of the broader process of internationalisation of innovation. Business R&D has become increasingly internationalised, but so have science, human resources and technology co-operation"[10].

According to the OECD, globalization has forced companies to innovate faster and to better conditions, and innovation itself has become more expensive. Consequently, companies seek new markets and technology trends worldwide[11]. In this sense, internationalization activities of an organization are manifold and can affect various other activities of the organization along the entire innovation value chain

10 OECD (2008): The Internationalization Of Business R&D: Evidence, Impacts And Implications, https://www.oecd.org/sti/ind/40841266.pdf (last access: 31.08.2020), p. 7–9.
11 Ibid.

(see chapter 5.2.1), from idea creation, over product development all the way to the market deployment.

## 2.2 Scale Up

The European Commission (EC) promotes a strong focus on scaleup organisations. The EC has announced to undertake a variety of measures to foster startups and scaleups to become world leading champions, thereby fostering growth and the creation of jobs in the EU.[12]

The meaning of the terms "scaleup" (or scale-up) and "scale up" is twofold: a) the scaleup as a company who has passed the start-up phase and has high growth potential which is the definition of the European Commission, b) scale up as the process of growth of an organization (also "scaling up"), usually determined by higher output ability, commercial ability, number of staff and number of operations. These terms are further defined in the following paragraphs.

### Scaleup

A "scaleup" is defined as a development-stage business (specific to high-technology markets), that is looking to grow in terms of market access, revenues, and number of employees, adding value by identifying and realizing win-win opportunities for collaboration with established companies.[13] A startup has become a scaleup when it has validated its business model hypothesis, solved all the start-up challenges and is ready for growth. A scaler is the next step of the development as it stands for an established company who has capacity to invest in scaleups, as the following graph shows:

12 European Commission (2016): Europe's next leaders: The Start-up and Scale-up Initiative, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2016%3A733%3AFIN (last access 31.08.2020).

13 Onetti, A. (2014): Scaleups. When does a Startup turn into a Scaleup, https://startupeuropepartnership.eu/scaleups-when-does-a-startup-turn-into-a-scaleup/ (last access: 15.05.2020).

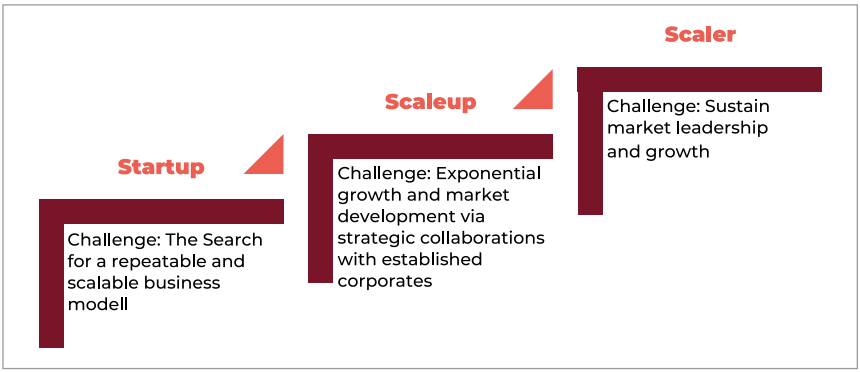



Figure 2: Phases of a scaleup (Source: Steinbeis 2i GmbH adapted from Onetti, 2014)

## Scale up

The **"scale up"** or **"scaling up"** of an organization usually refers to the point in time where the organization can measurably grow its users, customers and revenues. The market share has grown or is about to grow considerably. As soon as the organization enters the upscaling it needs to adapt its organizational structures and its resources to accomplish growth. It must be ready to regularly new customers because capacities and the profits increase steadily. In this time, it is essential to hire smart people with complementary skills.

Since the needs of and challenges for scaleups and organisations which are scaling up their operations and processes are similar, this handbook will cover both within the same scope.

## Scaling up in the agricultural context

In the context of agro-food, scaling up is an important issue when it comes to rural development and a healthy nutrition of the world population. It refers to scaling the impact of programmes and initiatives to reach a higher number of people and organizations, but also to the development of specific agricultural technologies and processes to increase the outputs of agricultural activities and meet the global food demand. Even though global food security is not in the focus of this paper,

the concepts presented here help defining scale up strategies for organizations of agro-food clusters in the Danube Region.

Generally, "scaling up" means "doing more" of something, butthis "something" varies considerably between different fields"[14]. More precisely, scaling up can be defined by the objective of scaling activities, which is "more quality benefits to more people over a wider geography are a more quickly, more equitably and more lastingly"[15].

In the context of sustainable industrial development scaling up is used in combination with the terms replication, streamlining, expansion and innovation. The table below provides a description of these terms showing their principles and application areas:

Scaling up

| Terminology | Description | Principle | Application Areas | Thrust |
|---|---|---|---|---|
| Replicating | Large scale application of known solutions and best practices ("widening") | Applying | Within the same target group, sector or cluster | Using best practices – business development |
| Streamlining | Eliminating steps that may not be necessary to achieve similar result | Learning | Within the same target group, sector or cluster | Doing it effectively and efficiently |
| Expanding | Seeking new applications and markets for practices proven elsewhere | Adapting | New Sectors, countries, clusters, etc. | Making it applicable in different areas |
| Innovating | Finding new solutions that have more substantive benefits ("deepening") | Research and development | All areas | Continuous development and improvement |

Figure 3: Typologies of scaling up (Source: Steinbeis 2i GmbH adapted from van Beers, 2014)

While scaling up in terms of replication often concerns actions of administrations or policy, activities an organisation performs under the other types usually involve:

14 Van Beers, D., Nazarkina, L. & Roza Grisales, J.A. (2012): Scaling Up Business Impacts on Sustainable Living: Theoretical Framework Report, https://growthorientedsustainableentrepreneurship.files.wordpress.com/2016/07/en-scaling-up-business-impacts-on-sustainable-living.pdf (last access 31.08.2020), p. 11.

15 Breukers, S., Mont, O., Backhaus, J. & Paukovic, M. (2011): SPREAD Sustainable Lifestyles 2050, Wuppertal, ECN, Lund University and CSCP.

- **Streamlining** to reach quantitative (financial) growth through efficiency gains,
- **Expanding** to new market sectors and/or geographic areas, and
- **Innovating** to increase sales through better products with more benefits for potential clients.

These are the main characteristics of a scaling up process.

## 2.3 Core Assumptions

### The Interrelation between Internationalization and Scale up

Internationalization and scale up are two different things without a causal relation, but they are interconnected and can be symbiotic. If an organisation scales up through gaining new geographic markets, then it is internationalizing even though internationalization was not its focus. If an organization wants to internationalize and reach new markets, it will automatically scale up its organization.

### Open Innovation

OI with its principles and tools is a concept best suited to address the needs of organizations that want to internationalize and scale up. For this reason, OI is a core principle of this handbook.

OI describes a mindset toward innovation by increased openness of the innovation process towards the complex world. It is referred to as "a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology".[16] It is also defined as "a distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organization's business model".[17]

16 Chesbrough, H.W. (2003): Open Innovation: The new imperative for creating and profiting from technology, Boston, Harvard Business School Press.

17 Chesbrough, H. & Bogers, M. (2014): Explicating open innovation: Clarifying an emerging paradigm for understanding innovation, in: Chesbrough, H., Vanhaverbeke, W. & West, J. (Eds.), New Frontiers in Open Innovation, Oxford, Oxford University Press.

The OI mindset suggests an open innovation process which allows "the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively[18]".

### Ecosystem

A main idea in OI is the multi-collaborative innovation ecosystem. In order to flourish, high growth potential SMEs, startups and scaleups do require a solid pool of established companies interested in providing growth opportunities. Scalers are already established companies that can provide growth opportunities to scaleups through procurement, corporate venture capital; investment, acquire, and acquisition[19]. The innovation ecosystem provides an ideal environment where different players – government, academia, industry and civil society – co-exist, co-operate, co-create, cross-fertilize each other. This again is a fertile ground for creating innovation[20].

# 3 Policy and Clusters

## 3.1 The Role of Policy

According to the Smart Specialisation Strategy (S3 strategy) of the European Commission, the role of policy is to shape the right framework conditions "which set priorities in order to build competitive advantage by developing and matching research and innovation own strengths to business needs in order to address emerging opportunities and market developments [...]".[21]

18 Chesbrough, H. (2011): Everything you need to know about open Innovation, https://www.forbes.com/sites/henrychesbrough/2011/03/21/everything-you-need-to-know-about-open-innovation/#6ad68d4575f4 (last access: 15.05.2020).

19 Onetti, A. (2014): Scaleups. When does a Startup turn into a Scaleup, https://startupeuropepartnership.eu/scaleups-when-does-a-startup-turn-into-a-scaleup/ (last access: 15.05.2020).

20 Curley, M. & Salmelin, B. (2013): Open Innovation 2.0: A New Paradigm, https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=14544&no=1 (last access: 15.05.2020), p. 7.

21 Sofos, N. (2014): Smart Specialisation Strategy (S3) and European Structural and Investment Funds (ESIF). https://ec.europa.eu/docsroom/documents/7886/attachments/1/translations/en/renditions/pdf (last access: 08.09.2020).

More specifically, the EC envisions to enhance competitiveness, especially of SMEs by amongst others: [22]

- Developing and implementing new business models for SMEs, **in particular with regard to internationalisation** and
- Supporting the capacity of SMEs **to grow in regional, national and international markets, and to engage in innovation processes**

This handbook will first examine what hinders the internationalization and scale up of organizations. The barriers organizations are facing are, at the same time, the needs upon which policy and clusters can adjust their support.

### 3.1.1 Needs and Barriers for Internationalization

When organizations go international through the mode of export, they usually experience **high initial costs** in the beginning which even cause resource losses before moving on to revenue generation. This process is further described in 5.1 specifying to agro-food organizations. Policy needs to be aware of this fact and adapt services addressing these topics accordingly. Support measures can be offered to members in accordance to the phase the organization is in (see 5.1) and the policy makers can set incentives to either encourage initial internationalization or further support activities if the organization has already gone international.

Further barriers for organizations have been stated especially for Czech SMEs[23] but findings coincide with an overall study of the OECD[24] on risk factors in the internationalization process of SMEs. Kubickova and Toulova[25] separately look at significant barriers to the internationalization process of SMEs and define them

22 European Parliament and Council (2013): REGULATION (EU) No 1301/2013 on the European Regional Development Fund and on specific provisions concerning the Investment for growth and jobs goal and repealing Regulation (EC) No 1080/2006, Article 5, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=-CELEX:32013R1301&from=EN (last access: 22.09.2020).

23 Kubíčková, L. & Toulová, M. (2013): Risk factors in the internationalization process of SMEs, Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis 61(7), pp. 2385–2392, DOI: 10.11118/actaun201361072385.

24 OECD (2009): Top Barriers and Drivers to SME Internationalisation. Report by the OECD Working Party on SMEs and Entrepreneurship, http://www.oecd.org/cfe/smes/43357832.pdf (last access: 31.08.2020).

25 Ibid.

for a) SMEs who are not international yet and b) SMEs already operating on foreign markets.

a) **SMEs before being international**: Figure 4 below gives a good insight into what hinders these SMEs to decide to go international. The most relevant barriers are **finding foreign business opportunities** and **difficulty in establishing contacts with customers on the foreign market**. Policy can support SMEs by promoting the exchange information on potential market needs with other players in order to facilitate the initial move.

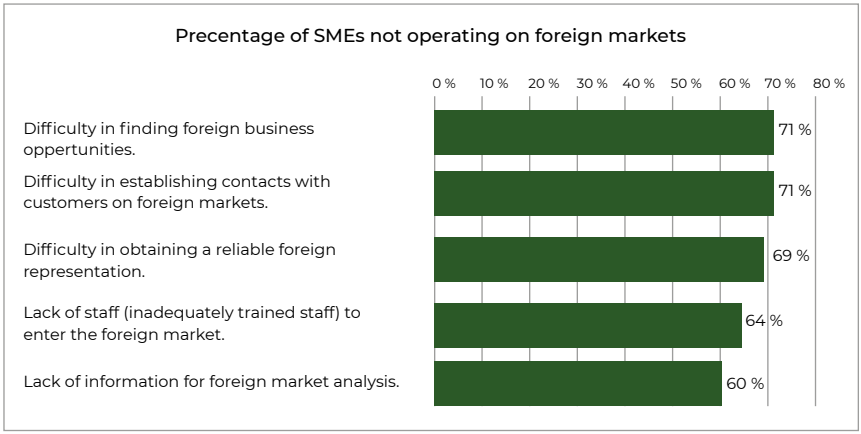



Figure 4: Key barriers for internationalization of SMEs before going international (Source: Steinbeis 2i GmbH adapted from Kubičkova & Toulova 2013, section of top five barriers)

b) **International SMEs**: Figure 5 shows that once operating internationally, SMEs face different obstacles. The main obstacle is the **need to improve quality and maintain price level**. This shows that in the foreign market, SMEs need to come up with product and process innovations to improve to sustain themselves and stay competitive. Another relevant challenge is **the excessive costs of transporting** the goods to a foreign market. Once international, the SMEs experience the actual internationalization costs. They need to be informed on these costs. International SMEs need to find ways to innovate in the foreign market, e.g. through access to R&D, and they need alliances in order to reduce their technological and logistics costs.

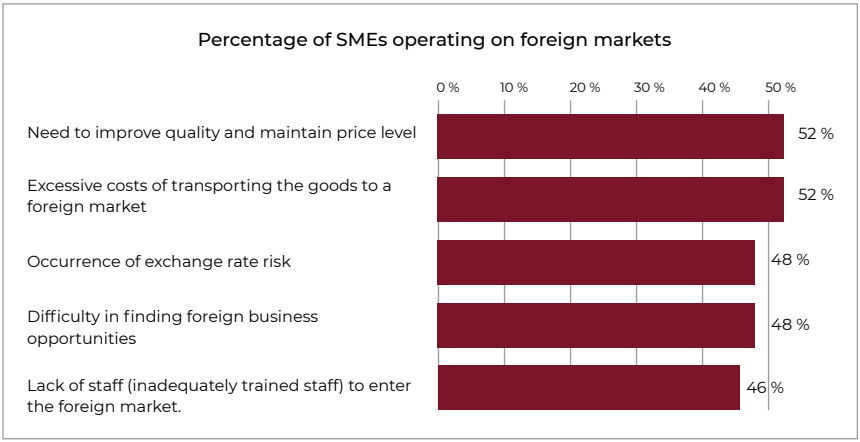



Figure 5: Key barriers of international SMEs (Source: Steinbeis 2i GmbH adapted from Kubičkova & Toulova 2013, section of top five barriers)

### 3.1.2 Needs and Barriers for Scale Up

Opportunities of scaleup concern the organization itself for obvious reasons of exponential growth. There are opportunities for a country, a region and even Europe that make it worth stimulating and boost organizations to scale, grow and thrive. The EC emphasises on scaleups as "fast growing businesses" as they intensify the EU's overall competitiveness and growth.[26] Among the most important barriers for the scaling of organisations are:

- Confrontation with too many **regulatory and administrative barriers**, especially in an international situation: Identifying administration and formalities is time-consuming and on top of this, understanding and digesting all the information, and further implementing them, can be very complicated. Tax is another major obstacle to cross-border business interactions, as it becomes even more difficult to comply with all 27 different EU tax administrations.[27]
- Difficulties in **accessing finance**: The access to EU public funding is not transparent enough and it does not specifically target organizations with potential to

26 European Commission (2016): Europe's next leaders: The Start-up and Scale-up Initiative, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2016%3A733%3AFIN (last access 31.08.2020).
27 Ibid.

become scaleups or even market leaders. Many more programmes for example specifically target startups, but do not address organizations which have passed the startup phase and are ready to scale and grow.

- Especially for research intensive scaleup organizations, getting access to finance (EU funding, investing, sponsors, etc.) is even more challenging because they are too far from selling commercialized products. Thus, traditional investment actors are reluctant to take the step. When the organization is more invested in R&D and lacks commercialization activities, the financial burden grows engaging potential delays and cost over-runs, which further discourage potential investors. These reasons for funding gaps affect both the startups and scaleups amongst R&D intensive firms[28].

- Limited **opportunities to find partners**: Startup and scaleup organizations need to connect with partners from all areas (investment, business, universities and research centres) and establish networks. They should be able to benefit from interconnected EU-wide clusters and ecosystems. Moreover, they need to find ways to engage with and recruit the right skills and talents as well as procure innovation[29]. For now, these tasks and activities as well as the access to these partnerships remain difficult to achieve for scale-ups. Therefore, further support measures are needed in this regard.

- **Access to knowledge, networks and skills**: For research intensive firms the access to knowledge – defined as "information combined with experience, context, interpretation and reflection"[30] – is crucial for their scale up and growth. Early stage firms who lack to acquire this knowledge in skilled staff via networks fail to grow out of the initial phase. "In effect, the combination of a firm's knowledge, networks and skills help to expand its absorptive capacity, enhance, competitive advantage and facilitate the potential scale up"[31].

28 Patton, D. & Huynh, T. (2018): What are the barriers to start-up and scale-up in R&D intensive firms?, https://www.enterpriseresearch.ac.uk/wp-content/uploads/2018/11/No11-SOTA-What-are-the-barriers-or-enablers-of-start-up-and-scale-up-D.Patton-1.pdf (last access: 15.05.2020), p. 1–2.

29 European Commission (2016): Europe's next leaders: The Start-up and Scale-up Initiative, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2016%3A733%3AFIN (last access 31.08.2020).

30 Patton, D. & Huynh, T. (2018): What are the barriers to start-up and scale-up in R&D intensive firms?, https://www.enterpriseresearch.ac.uk/wp-content/uploads/2018/11/No11-SOTA-What-are-the-barriers-or-enablers-of-start-up-and-scale-up-D.Patton-1.pdf (last access: 15.05.2020), p. 3–4.

31 Ibid, p. 3 ff.

A look into barriers gives us the conclusion that internationalization as well as scale up needs are very similar, if not the same. For both, organizations require partnerships, alliances and networks for:

- Access to R&D
- Access to finance
- Access to skills and knowledge
- New markets and new sectors

### 3.1.3 Partnerships as the Key

Looking at the barriers we come to the following conclusion: partnerships seem to be the key for overcoming the barriers and for benefitting fully by the opportunities given by internationalization and scaleup. In general, partnerships share and reduce market and technology risks.

Partnerships provide solutions to all above barriers, obstacles and needs faced for internationalization as well as for scaling up. They contribute to:

- Access to finance through partnerships with financiers, or other established companies who can invest in organizations and help them scale.
- Access to new markets (geographic and sectoral): International partnerships – e.g. suppliers, users, technology providers – can add on for geographically new markets. Partnerships of other market segments can open further extension of markets and income generation.
- Access to resources – skills, personnel resources, knowledge and know-how: Companies, especially SMEs and even more research-intensive organizations depend highly on skills. The success of R&Ds is strongly interconnected with their ability to hire research staff and their skills. SMEs face another scenario. In order to stay competitive, they would have to develop departments and invest in internal skill development for creating resources internally to meet the market's demands. Partnerships offer the opportunity for SMEs to stay concentrated on their specific knowhow without losing time and resources on new personnel

development but share these personnel resources from their partners who are ideally complementary.

- Acceleration of time to market: SMEs depend even more on a speedy development of their technology or business than large companies do. While SMEs concentrate on one product or technology they need to establish and if they fail, their total existence will be on risk, big companies can switch easily into other products, which they already have in their portfolio. Investing in own development or marketing department would take considerably longer.
- Appropriate staff and skills can be hired but this can take time. A more rapid and more efficient scaling can be achieved by outsourcing to third parties which have the staff and the investment in technologies or systems that are more efficient than when they are done by the own company.

Policy can support organizations of the agro-food sector by implementing policies that encourage and build up the right ecosystem, in which the right partnerships are easily available and accessible. There is a common understanding that clusters are enabling players of connecting all innovation players with each other locally as well as internationally and hence, they are to be addressed in a way that they can act as such for their members:

*"By fostering interactions and cross-fertilization between different innovation actors (including users/costumers) in a region and promoting cross-sector and cross-cluster activities, clusters offer a favourable ecosystem in which new industries can flourish and grow stronger."* [32]

32 Tactics (2012): Using clusters to adress emerging industries and services, https://issuu.com/boessoi/docs/7_using_clusters_to_address_emergin (last access: 22.09.2020).

## 3.2 Role of Clusters in Internationalization and Scale Up

There are two ways to look at clusters in regards to internationalization and scale up: One way is to look at clusters as organizations and their internationalization and/or scale up efforts. The second way is to look at the services of clusters towards their members to internationalize and/or to scale. Both perspectives will be covered in this handbook.

- First, we will discuss how cluster managements can become stronger as organizations, because we assume that if they are stronger and more visible internationally, they will be able to offer better support to their members.
- Second, we want to look at them from the perspective of the affiliated organizations and see, how they can offer their services and support them in their internationalization and scale up efforts.

European cluster policies have had one core philosophy in the last fifteen years: the development of the innovation abilities and competitiveness of the cluster members, particularly SMEs. Clusters do play an essential role in this through bridging research and business, capturing needs and demands, enabling and fostering interactions and cross-fertilization between innovation actors within the country and beyond.[33]

### 3.2.1 Clusters as Organizations

#### Internationalization of clusters

Cluster and network managements are often under a certain pressure to provide services to their members especially when they sustain themselves by membership fees. They need to offer what organizations cannot do by themselves. If clusters and networks position themselves internationally, this will have an added value for their members, as they will attract more potential partners and contacts for

33 Tactics (2012): Using clusters to adress emerging industries and services, https://issuu.com/boessoi/docs/7_using_clusters_to_address_emergin (last access: 22.09.2020).

members, if they are well connected internationally. The participation in financial programmes aimed at clusters and networks will furthermore lead to an increase in **international awareness and visibility**, which again will benefit the whole cluster as well as its members in attraction of good contacts. These contacts, in turn, will initiate even more participation in further projects, and hence further contacts, which will again be useful for the cluster and its members.

The study "European Clusters go international" of the Institute for Innovation and Technology[34] compared interview data from cluster managers and members from 2007 and 2010. It found the following results:

- There is a correlation between the responsibility of the management for the internationalization of the members and their actual internationalization success. So, members in networks and clusters clearly benefit in those cases where managements have a clear mandate for the internationalisation of players and if the latter support such activities.
- Networks and clusters who have developed and implemented an internationalisation strategy are more successful in initiating and implementing international cooperation than those without. The internationalization strategy allows to derive concrete n coordinated measures which leads to better actions and results than pursuing internationalization individually by eventually uncoordinated measures/steps.

34 Meier zu Köcker, G., Müller, L. & Zombori, Z. (2012): European Clusters Go International: Networks and clusters as instruments for the initiation of international business cooperation, Berlin, Institute for Innovation and Technology, p. 22ff.

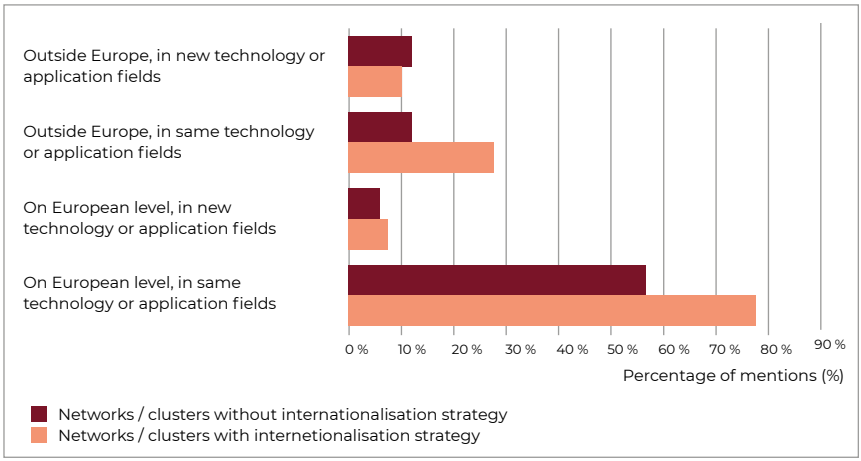



Figure 6: Internationalization strategy of clusters and acquired funding (Source: Steinbeis 2i GmbH adapted from Meier zu Köcker, Müller & Zombori, 2012)

As Figure 6 shows, clusters whose cluster management had defined an internationalization strategy were visibly more successful in acquiring funding on EU level by members. The internationalization strategy of cluster management has a positive impact on the internationalization activities of their members.

## Scale up of clusters

If clusters and networks invest effort to find strategic partnerships, they can more easily sustain themselves by European or other financial programmes aimed at clusters. Hence, they will be able to scale themselves, hire more staff and be able to offer more services to members. The scale p of clusters as organizations will not be further addressed here, as it is not in the scope of the handbook. How clusters can support the scaling process of their member organizations will be discussed in the next section.

## 3.2.2 Clusters as Service Providers for their Members

### Supporting cluster members in internationalization

Clusters can act as instruments for internationalization and growth for their members: member organizations can channel their **internationalization efforts through clusters**. Organizations of any kind, but especially SMEs are more successful in their internationalization efforts when they are members within a cluster. International cooperation between companies could be facilitated if they were affiliated to a network or cluster[35]. Thus, **Networks and clusters are great instruments for internationalization.** The explanation for this effect is that through cluster membership **internationalization cost** can be reduced through the analysis of the intended future field of action but also the pursuit of the actions by **joint use of resources** (e.g. marketing possibilities, transport capacities, sources of supply), which is a great advantage that networks and clusters offer anyway since **labour within networks** can be divided/shared.

### Supporting cluster members in scaling

Scaling requires support to find resources, financial as well as personnel. Clusters can support their members in **identifying financial schemes** on regional, national or EU level that fit their requirements and support them to overcome administrative obstacles. For this reason, it is important to be well connected and know the stakeholder network. This way the cluster network can pass through to other appropriate networks.

More significant and closer to a cluster's natural role is the **support to find partnerships**.

### Supporting cluster members in finding partnerships

**Partnerships and the dilemma to go for them:** There is often a **reluctance and insecurity**, or even fear involved when (especially) SMEs assume a partnership, be it regional or international. They usually consider the following risks:

35 Meier zu Köcker, G., Müller, L. & Zombori, Z. (2012): European Clusters Go International: Networks and clusters as instruments for the initiation of international business cooperation, Berlin, Institute for Innovation and Technology, p. 7.

Especially SMEs have developed one, very specific technology or product which they have eventually successfully introduced to the market and **rely on this specific know-how**. This is the know-how, asset or protected technology that makes them up. They rely strongly on this secret know-how for staying competitive on the market so they cannot risk disclosing any of it to any potential partner. If this secret is lost, their existence on the market is at risk.

R&D firms and knowledge intensive business services (KIBS) have an internal innovation process that does not follow a structured process. They apply novel methods and approaches on lead clients, researcher staff is encouraged to test new ideas during contract projects with lead clients. Their research leads to knowledge, know-how, new methods and is not tangible. These organizations do not own IP or tangible products. One reason for not doing so is that they have **concerns about knowledge leakage**[36].

The Institute for Innovation and Technology conducted in 2007 a study on international cooperation of clusters. This study examines amongst others barriers for international cooperation of cluster members. It shows that a main barrier is the **lack of trust** between the members of different networks or clusters. The perception of others as competitors hinders internationalization efforts of individual cluster members and even of the management of the clusters they are members of[37]. In a later study of the year 2010, lack of trust was still considered as a barrier for international cooperation but was the third barrier in the priority. The major barriers to initiate international cooperation shifted to **lack of finance or other monetary reasons** followed by **lack of time or capacity**.

**Reduce the dilemma to go for partnerships**: Good network and cluster management can reduce barriers for members, especially regarding "lack of trust between partners" and "cooperation partners and competitors" since they can act as moderators or communicators[38].

36 Li, X., Gagliardi, D. & Miles, I. (2018): Innovation in R&D service firms: evidence from the UK, Technology Analysis & Strategic Management 31(6), pp. 732–748, DOI: 10.1080/09537325.2018.1549729, p. 10.

37 Meier zu Köcker, G., Müller, L. & Zombori, Z. (2012): European Clusters Go International: Networks and clusters as instruments for the initiation of international business cooperation, Berlin, Institute for Innovation and Technology.

38 Ibid, p. 22.

Companies in networks and clusters find it easier to engage in international cooperation. An explanation for this seems to be that cooperation through a cluster help to overcome exactly this main barrier for partnering, the "lack of trust", which seems to be more hindering when it is tried on individual basis.

The figure below shows, which measures for internationalization are the most essential for cluster members[39]:

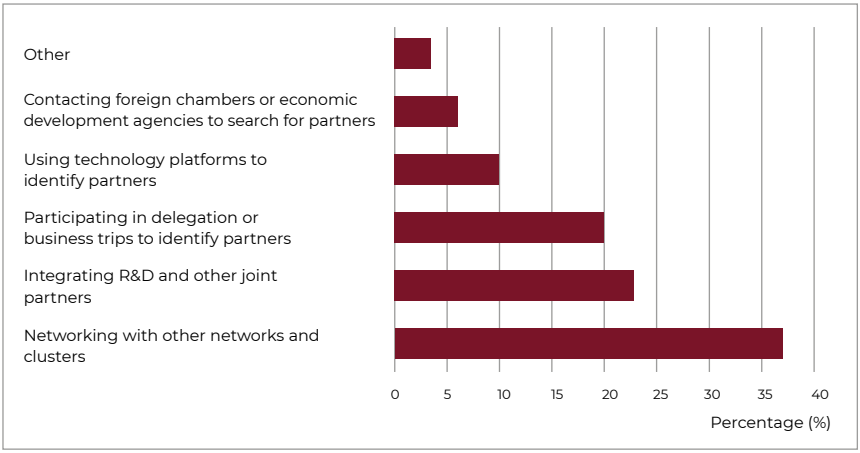



Figure 7: Most essential services of clusters from SME perspective (Source: Steinbeis 2i GmbH adapted from Meier zu Köcker, Müller, Zombori, 2012)

1st important element considered in clusters is "**networking with other clusters and networks**". Networks and clusters are often the first contacts for international interactions and that this is how they want to be seen by their members, as a facilitator in contact building. Often the most important point is to identify "**the right partner**" and clusters and networks can be and need to be the connection point at the first phase of confidence building. This shows that the initial trust barrier to go for partnerships – and even more for international ones- can be reduced by acting through a network rather than alone.[40]

39 Meier zu Kocker, G., Muller, L. & Zombori, Z. (2012): European Clusters Go International: Networks and clusters as instruments for the initiation of international business cooperation, Berlin, Institute for Innovation and Technology.

40 Ibid, p. 15.

2nd important element considered in clusters is the **integration of R&D** and other joint partners. This indicates that organizations/cluster members see such projects as a source of financing to broaden international cooperation, which hardly would be possible without such projects. So, cluster membership again, gives a benefit to attract these kinds of projects. Through cluster membership they can much more effectively get to be partners in them and/or can attract international R&D resources -skills as well as finance- in their own region.

# 4 Internationalization, Scale Up and Innovation

## 4.1 Interconnections and Synergies

### Internationalization and innovation

Although one may assume that organizations want to internationalize to increase their revenue, there are still some who would not opt for it and consider themselves as innovative and financially well enough to stay at their home market. Even if an organization is content with its financial revenue and not interested in more income by trading with foreign markets, there are other benefits to think about it again. There is evidence of correlations between internationalization, innovation and productivity.

Impacts of exports and imports on organizations, especially SMEs are observed as following:

- Improvement of productivity of exporters after and because they start exports. This correlation is explained by learning processes that take place during export activities. Exporters learn from the foreign markets they have targeted and therefore adapt and develop their technologies and products based on them. By trading, firms get input by foreign partners, then adopt new technologies or practices and develop new products and services which again increase their productivity level.

- The same happens with firms, that import. As they import products of higher quality, e.g. made of new materials or produced by novel technologies, they turn the inputs into higher quality outputs while they develop better products themselves. Importers adopt and adapt new technologies and advance their own ones accordingly. Consequently, importers prepare for their own later export with improved products and the export afterwards again turns out positive for their growth[41]. Thus, access to imports – be it products, R&D, skilled personnel, etc. – facilitates the export behaviour.

- Increase of innovation capacity: exporters need to meet growing international demand and competition by exporting products of higher quality. They invest in product innovation already while preparing export, which raises their ability to meet demands and specifications of foreign markets, thus the decision to export already leads to an internal process of product innovation. After having already exported, further innovation process takes place. Experiencing more intense competition compared to the domestic market as well as "knowledge spillovers coming from technologically sophisticated foreign partners, namely buyers, suppliers and competitors" have an impact on innovation output indicators. Furthermore, due to export revenues, firms tend to invest in technology upgrades, and this again leads to additional product innovation[42]. Innovation increase happens with import behaviour as well, as the import of new products and technologies triggers innovation in terms of upgrades in themselves.

Therefore, internationalization (e.g. through import and export activities) is interrelated with innovation for the following summarized arguments:

- Exporting firms may be the more innovative ones, already before they export, compared to their counterparts in their domestic market, which means that internal innovation capability of firms is a condition for the internationalization process in terms of trade or is at least beneficial to it. Similarly, importing SMEs start importing by searching new products because they are actually looking for international input for their innovation processes and the decision

41 Alvarez, R. & Robertson, R. (2004): Exposure to foreign markets and plant-level innovation: evidence from Chile and Mexico, The Journal of International Trade & Economic Development 13(1), pp. 57–87, DOI: 10.1080/0963819042000213543.

42 Bustos, P. (2011): Trade Liberalization, Exports, and Technology Upgrading: Evidence on the Impact of Mercosur on Argentinian Firms, The American Economic Review 101(1), pp. 304-340, DOI: 10.1257/aer.101.1.304.

to innovate has been made prior to the decision to import. Innovation boost may not even be just a result or consequence of import behaviour but import behaviour may also be an intention of firms who want to innovate. Therefore, the innovation process is part of the preparation process for the internationalization of the company.

- Export as well as import activities as part of the internationalization strategies are particularly important for SMEs. Unlike large firms, SMEs do not have sufficient resources in terms of R&D, skills and capital to internationalize. A survey that has been conducted amongst Spanish manufacturing SMEs shows, that only a 0,3 % of them report Foreign Direct Investment (FDI) compared to 48 % of their performed export and import activities[43]. Therefore, **export and import activities offer growth with less risks and less resource commitments.** It is a goal worth pursuing as it doesn't stand for simply more revenue generation by e.g. exporting. It triggers innovation processes in companies.

## Scale up and innovation

Scaling up concepts as well as scaling ambitions of organizations contribute to identify strategic partnerships to scale business impact and suggest opportunities for business development for entrepreneurs. The process of trying to scale the own organization results often in **business model innovation**. Some business model innovation concepts by collaboration along the supply and value chains are:[44]

**Collaborative Production Business Models**: scale up requires resources, knowledge, skills, and finances to buy technology. As organizations and especially SMEs lack these, they can gain on competitiveness and time to market through collaborative production business models. Significant and complementary knowledge and skills that are not within the borders and capacities of the organization may exist in other parts of the supply and value chain. Exploring collaborative opportunities within their supply and value chain gives opportunities and ideas to discover innovative business models based on the change or adaption of the own business model.

43 Bustos, P. (2011): Trade Liberalization, Exports, and Technology Upgrading: Evidence on the Impact of Mercosur on Argentinian Firms, The American Economic Review 101(1), pp. 304-340, DOI: 10.1257/aer.101.1.304.

44 Van Beers, D., Nazarkina, L. & Roza Grisales, J.A. (2012): Scaling Up Business Impacts on Sustainable Living: Theoretical Framework Report, https://growthorientedsustainableentrepreneurship.files.wordpress.com/2016/07/en-scaling-up-business-impacts-on-sustainable-living.pdf (last access 31.08.2020), p. 24ff.

Collaborations along the value chain can occur on different levels, such as:

- Between company departments in medium sized enterprises, e.g. in production or purchasing
- Between SMEs, e.g. and especially through sharing resources and know-how
- Between SMEs and large and/or international enterprises, e.g. supply chain initiatives initiated by customer demand.

**Collaborative Consumption Business Models** are seen often as a solution for growth especially in the agro-food sector. The economic model is based upon sharing, swapping, trading or renting products instead of owning them. This is an alternative way of "reduce, reuse, recycle, repair" methods of dealing with waste. The benefits of collaborative consumption models are sharing assets and costs by borrowing instead of procuring items.

**Multi-functional product & Service Business Models** mean multi-functional and simultaneous use of products and services to better meet consumer demands. With reduced capital and operational costs – meet multiple consumer demands, e.g. farm with enhanced water efficiency.

**Disruptive Business Models** create a new market and a new value network and eventually displace an earlier technology of an earlier business model. There are not many examples of such business models, possibly because existing disruptive technologies would imply a significant sunk capital investment.

Partnerships complement what you do not have in order to deliver value to the market. Changes at business model level can open up additional markets (geographical as well as sectoral), leading directly to scale up. There are plenty of examples in the agro-food sector creating additional value to customers as well as to agro-food organizations by business model innovation (see also 6.2.2 and 6.2.3).

The EU project AGROFORVALOR[45] has brought up various solutions of valorisation of residues of farmers and foresters and created new business opportuni-

45 Agriforvalor (n.d.): Agriforvalor, http://agriforvalor.eu/ (last access: 08.09.2020).

ties by providing waste as resource for other industries, such as food, animal feed, fuel, fertilizer or functional material. From being producers of agro-food products farmers could additionally be resource providers to other industries. A platform[46] combines all solutions available so far including their TRL and their application areas.

## 4.2 Open Innovation

"For business, OI is a more profitable way to innovate, because it can reduce costs, accelerate time to market, increase differentiation in the market, and create new revenue streams for the company."[47]

Internationalization and/or scaleup require skills, R&D, capital -these factors can be summarized in **strategic knowledge** – to go ahead as those are the barriers that hinder the two processes. Moreover, companies need ways to reduce risks related to both aspects as well as buying time to market. Partnerships can support in all these aspects if chosen strategically. OI tactics help identifying them: access to strategic knowledge happens through open **knowledge** and **creativity flows**:

**Knowledge flows**: In the **outside-in** process, external ideas, assets, technologies, IP from outside are brought and used in an organization's own innovation process. The **inside-out** aspect stands for ideas, assets, technologies, IP within the organization that are unutilized or underutilized and outsourced to other organizations. This can be the case when e.g. the firm does not have the financial means to develop them further or simply when they do not fit to their current business model or strategic interest anymore. In the inside-out process, the organization exploits these ideas by allowing them outside of the company, so that others can integrate them in their innovation process.

46 Agriforvalor (n.d.): Sidestreams, http://agriforvalor.eu/sidestreams (last access: 08.09.2020).

47 Chesbrough, H. (2011): Everything you need to know about open Innovation, https://www.forbes.com/sites/henrychesbrough/2011/03/21/everything-you-need-to-know-about-open-innovation/#6ad68d4575f4 (last access: 15.05.2020).

Organizations with this mindset get influenced by ideas inside and outside of their organization boarder. The conversion of ideas into products is not strictly inside their boarders. They let ideas – both, their own ones or from outside – flow into their company during the research phase. The market deployment of the product does not necessarily stay within their organization boarders either. It can be shared with other companies on the market. This leads to a beneficial situation for all involved partners, they are "innovating with partners by sharing risk and sharing reward"[48].

**Creativity flows: Inbound creativity**[49] means the method to research external resources such as customer feedback and needs in order to reach ideas that meet with the consumer needs and expectations. This is helpful when companies cannot create enough ideas by themselves. **Outbound creativity** describes the scenario for the use of unused internal ideas. There are often innovative ideas that have failed or have not been pursued for different reasons. OI suggests, that projects that have not been successful inside the company, can succeed in other companies "by marketing them with an innovative business model different from the currently implemented inside the company of origin"[50] Exporting ideas to partners or spinning-off the failed project as a new technology can help the company to overcome the innovation expenses. **Coupled creativity** aims to build a partnership that is used to collect information from the operating environment. This happens when e.g. a challenge is established, and different players are invited to participate and present solutions.

48 Chesbrough, H.W. (2003): Open Innovation: The new imperative for creating and profiting from technology, Boston, Harvard Business School Press.

49 Elmansy, R. (2015): The Open Innovation Model's role in Fueling Creativity, https://www.designorate.com/open-innovation-model-in-creativity/ (last access: 15.05.2020).

50 Ibid.

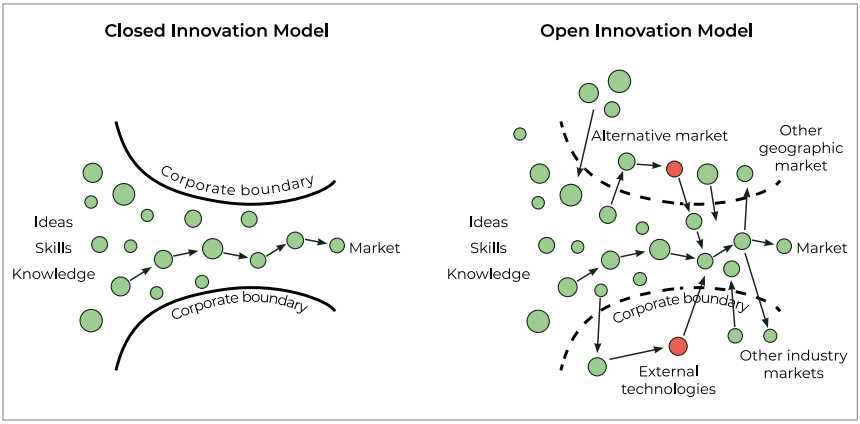



Figure 8: Knowledge and Creativity Flows in Closed versus Open Innovation (Source: Steinbeis 2i GmbH adapted from Vapulus, 2019)

Knowledge and creativity flows through interaction with the ecosystem are the OI way to access strategic knowledge through partnerships.

**Knowledge exchange**[51] encompasses learning and is an important part the innovation production process, which occurs through:

- **Knowledge accumulation:** the acquisition of knowledge and innovation experiences
- **Knowledge transformation:** the stage where the knowledge is translated into innovation outputs, e.g. new or better technology or product, based on R&D or non-R&D product development
- **Knowledge exploitation:** the stage when the firm uses the innovation and originates economic benefits

51 Kühne, B., Lefebvre, V. & Gellynck, X. (2013): Knowledge Exchange in Innovation Networks: How Networks support open Innovation in Food SMEs, http://centmapress.ilb.uni-bonn.de/ojs/index.php/proceedings/article/viewFile/1312/295 (last access: 18.06.2020).

Not only SMEs in general benefit from OI knowledge flows. Some organizations have based their entire business model on exchanging knowledge with their environment. Research intensive organizations are just one an example on how organizations go this way: Research intensive organizations – independent from their status as start-up, scaleup or established SME – have a different scenario. They exist because of the opening of R&D boundaries and R&D outsourcing of firms. The nature of their business makes the existence of an intact innovation ecosystem inevitable.

The characteristic for **Knowledge Intensive Business Service firms (KIBS)**[52] is that they are closely involved with their customers, and the interactive learning processes with them generates new knowledge. These interactions are vital for their innovation creation processes as well as the share of highly qualified staff. Open innovation tactics are the best way to get to these highly qualified skills and knowledge, same as for their product development. They innovate through client interaction.

**R&D service firms**[53] share a common base with KIBS when it comes to high level of human capital employed, high concentration of knowledge in their activities and thorough collaboration with clients, they differ by pitting strong emphasis on inhouse R&D. They are involved in the R&D process of their clients and innovate through co-development.

**New Technology- based firms (NTBFs)**[54] exploit their innovation ecosystem to create their own innovation and IP. They turn input from their ecosystem into highly innovative products, that they manufacture and bring into the market. They hire experienced scientists and engineers because they depend on this knowledge. They locate in urban areas, science parks or other similar places where external knowledge can be found in density and can be brought quick enough inside. Apart from selling products into the market, the out-licence technology assets as a supplementary revenue source.

52 Li, X., Gagliardi, D. & Miles, I. (2018): Innovation in R&D service firms: evidence from the UK, Technology Analysis & Strategic Management 31(6), pp. 732–748, DOI: 10.1080/09537325.2018.1549729, p. 2f.
53 Ibid, p. 2 ff.
54 Ibid, p. 4.

All types of research-intensive firms exist based on their innovation ecosystem and already have from the beginning used open innovation practices both, inside-out and outside-in to innovate. Their business models depend on:

- High interaction with clients
- Access to strong scientific knowledge and highly qualified staff in general
- High degree of openness

"They are highly engaged in the wider innovation ecosystem via outsourcing, collaborations and partnerships"[55] as partnerships enable them to use outside ideas, knowledge and skills which they would not be able to build up by themselves.

## Open innovation and trends

OI includes always the inner organization world and the outer world. The constant observation of market and trends is indispensable. **Trends** are driving forces for innovations. Organizations are challenged to react on time and adapt or modify their business models, upgrade their technologies, or prepare to expand to other markets. These are steps that can require resources. Beyond the trends within the own branch or sector and affecting the own industry there are also megatrends, developing in macro environment, being an "emerging force likely to have a significant impact on the kinds of products consumers will wish to buy in the foreseeable future".[56]

The OI concept inspires to measures, that address trends and megatrends and at the same time save resources. Many alliances, initiatives and networks reach out to new markets or technology sectors and are results of the anticipation of trends. Despite of the challenge and pressure trends put on organizations, OI can show the way to turn them to occasions.

Trends and megatrends that affect the food sector have been identified in the following figure:

55 Li, X., Gagliardi, D. & Miles, I. (2018): Innovation in R&D service firms: evidence from the UK, Technology Analysis & Strategic Management 31(6), pp. 732–748, DOI: 10.1080/09537325.2018.1549729, p. 2f.

56 Monash University (n.d.): Megatrend. Marketing Dictionary. https://www.monash.edu/business/marketing/marketing-dictionary/m/megatrend (last access 31.08.2020).

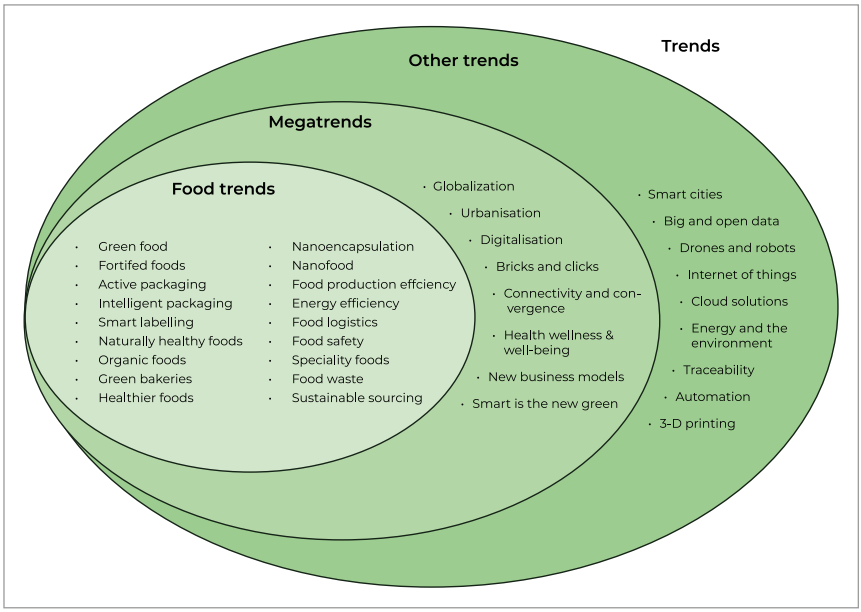



Figure 9: Trends in the Agro-food sector (Source: Steinbeis 2i GmbH adapted from Ramirez-Portilla et al., 2016)

Open innovation strategies lead organizations to build networks and foster knowledge exchange, therefore, support the process of learning within and among these organizations.

## 4.3 The Benefits of Networks

Networks, formal or informal, facilitate the diffusion of information, which can become knowledge which, in turn, can lead to innovation. Especially for SMEs, network building is an essential strategy because it allows them access more information, and jointly build knowledge and use resources. Networks contribute to the knowledge exchange (knowledge accumulation, transformation and exploitation) in the innovation production process. Therefore, networks have a key role in knowledge exchange and innovation building.[57]

57 Kühne, B., Lefebvre, V. & Gellynck, X. (2013): Knowledge Exchange in Innovation Networks: How Networks support open Innovation in Food SMEs, http://centmapress.ilb.uni-bonn.de/ojs/index.php/proceedings/article/viewFile/1312/295 (last access: 18.06.2020).

The **process of learning** is characterized by identifying, gathering, exchanging and interpreting relevant information and subsequently using this information to develop and apply new competencies for business improvement and innovation.[58] As learning can be considered a social construction process, the conditions under which learning happens have a strong influence on what is learned.[59] **Networks can shape the conditions for optimal learning and fostering learning mechanisms.**[60] Learning in networks refers to the organization's ability to combine tacit and explicit knowledge resources through interaction with other organizations in the network in a dynamic process. How networks can be used to propel the internationalization and scale up of a company will be described in the following chapters.

### 4.3.1 Internationalization through Networks

Internationalization has become significant for the competitiveness of organizations. Cross-border activities provide opportunities for revenue growth, the exchange of knowledge and the enhancement of capabilities, thereby strengthening the long-term competitiveness of the organization. Within this context, internationalization can be defined as "the process of adapting firms operations (strategy, structure, resource, etc.) to international environments".[61]

Internationalization processes can be implemented in different ways resulting from different strategies. The Uppsala Model (U-model)[62], the Network Model and the International Entrepreneurship Theory are common models that describe the internationalization processes of organizations.

58 Keursten, P., Verdonschot, S., Kessels, J. & Kwakman, K. (2006) Relating learning, knowledge creation and innovation: case studies into knowledge productivity, International Journal of Learning and Intellectual Capital 3(3), pp. 405–420, DOI: 10.1504/IJLIC.2006.011749.

59 Cohen, W.M. & Levinthal, D.A. (1990): Absorptive Capacity: A New Perspective on Learning and Innovation, Administrative Science Quarterly 35(1), 128–152, DOI: 10.2307/2393553.

60 Powell, W.W., Koput, K.W. & Smith-Doerr, L. (1996): Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology, Administrative Science Quarterly 41(1), pp. 116–145, DOI:10.2307/2393988.

61 Calof, J.L. & Beamish P.W. (1995): Adapting to foreign markets: Explaining internationalization, International Business Review 4(2), pp. 115–131.

62 Masum, M.I. & Fernandez, A. (2008): Internationalization Process of SMEs: Strategies and Methods, https://www.diva-portal.org/smash/get/diva2:121500/FULLTEXT01.pdf (last access: 31.08.2020), p. 11.

### Uppsala-model (U-model)

The internationalization process of organizations takes place step by step, by gradually increasing their international presence. First they export via an agent in the market of choice, then they find a sale subsidiary and as a last step they start a wholly owned subsidiary. By increasing the export destinations firms increase gradually their geographic diversification.

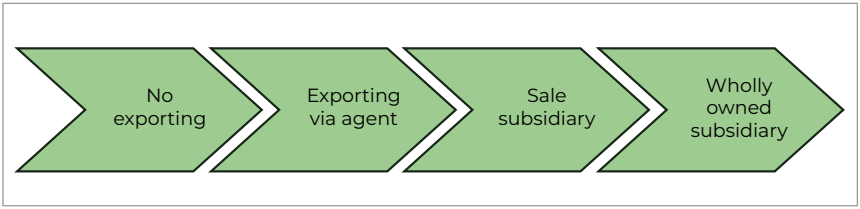



Figure 10: Internationalization through export in the U-model (Source: Steinbeis 2i GmbH adapetd from Masum, & Fernandez, 2008)

Organizations choose the markets by the factors:

- Experiencing knowledge – the experience they have from their past performance. If they are aware of these, they will perform better in the foreign market
- Psychic distance – factors that can disturb the information flow, which means that markets in countries with similar language and political system are preferred
- Cultural aspects – countries with similar culture are preferred, as aspects like currency matter in the operation.

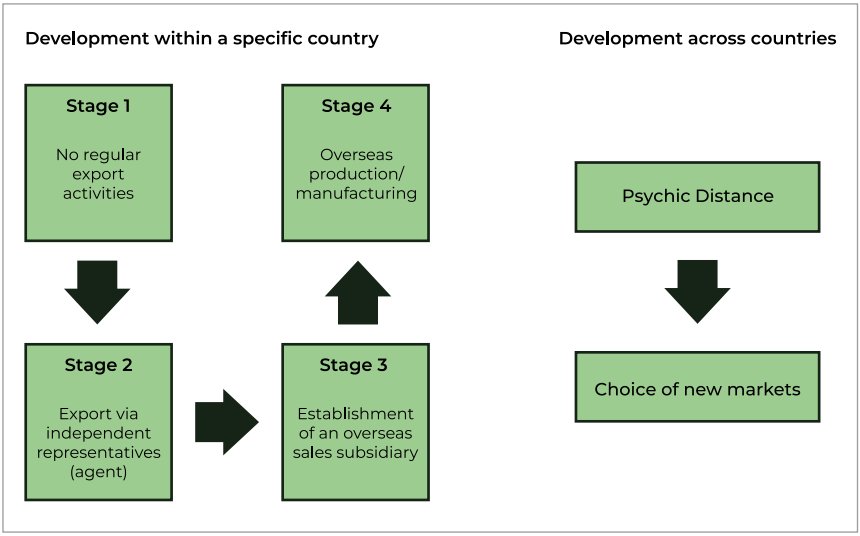



Figure 11: Operational levels in the U-model (Source: Steinbeis 2i GmbH adapted from Masum & Fernandez, 2008)

The U-Model predicts that the internationalization of organizations takes place in markets where the psychic distance is shorter, and the main modus of market entry is export.

## The Network model

Organizations establish geographic expansion through relationships and networks[63] with independent actors. They achieve internationalization through the experience and resources of several network partners. The relationships with these partners or actors can be financial, technical, legal or economical.

63 Mitgwe, B. (2006): Theoretical Milestones in International Business: The Journey to International Entrepreneurship Theory, Journal of International Entrepreneurship 4, pp. 5-25, DOI: 10.1007/s10843-006-5872-5.

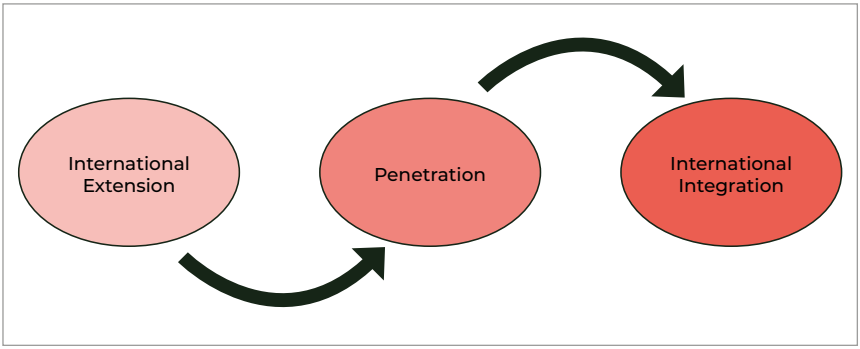



Figure 12: Network approach to internationalization (Source: Steinbeis 2i GmbH adapted from Masum & Fernandez, 2008)

In that, networking is a source of information and knowledge on foreign markets that can be acquired even before the initial internationalization measures. It can speed up the internationalization process for the organization. Organizations acquire knowledge by establishing close relationships with different actors, e.g. customers, industry, suppliers and public agencies.

### International Entrepreneurship Theory (IET)

The International Entrepreneurship Theory (IET)[64] model is based on the cross-border behaviour of entrepreneurs. The model describes how actors – mainly entrepreneurs – learn, analyse and exploit opportunities to internationalize their activities abroad. It is the entrepreneur who ideally has the skills to identify a competitive advantage in another market and to decide for the steps to pursue the innovation regionally as well as internationally. In this model, the basis for internationalization is the entrepreneur, being the one who has the experience and knowledge to measure foreign market opportunities and has the ability to establish relationships with customers, suppliers, other firms, governments and other organizations.

64 Masum, M.I. & Fernandez, A. (2008): Internationalization Process of SMEs: Strategies and Methods, https://www.diva-portal.org/smash/get/diva2:121500/FULLTEXT01.pdf (last access: 31.08.2020), p. 17.

## The theory that works best for this handbook

These internationalization theories depict how organizations can shape different internationalization strategies. The three models are not exclusive though. Elements of all three of them can be combined in order to achieve the best results in internationalization strategy. An overview of the three models in Figure 13 below shows that they have elements in common is shown.

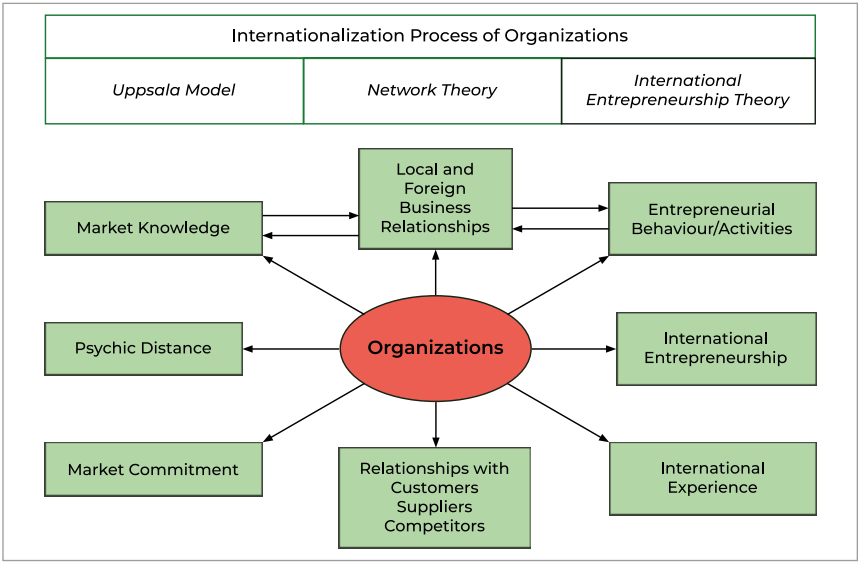



Figure 13: Internationalization theories U-model, network theory, IET (Source: Steinbeis 2i GmbH adapted from Masum & Fernandez, 2008)

All three models have strengths as well as limits in explaining the reality of the internationalization process of organizations in general and this of agro-food organizations in the Danube region in particular.

Internationalization does not occur necessarily step-by-step as described in the U-model. Organizations can skip stages and internationalize much faster than gradually and cautiously[65]. Organizations also do not internationalize only

65 Chetty, S., & Campbell, H.C. (2003): Paths to internationalization among small and medium-sized firms: a global versus regional approach, European Journal of Marketing 37 (5/6), pp. 796–820, DOI: 10.1108/03090560310465152.

through export and sales but also through a variety of other modes such as common research within international R&D projects. Especially so called "born globals" are a challenge for the U-model and not explicable by it at all. Born globals are the types of companies that have an international, global orientation already at the beginning of their establishment having the business model to meet a global niche of the market[66].

On the other side the U-model emphasizes knowledge and learning processes on foreign markets to succeed internationally. Agro-food organizations face missing knowledge of the foreign market as a main barrier for internationalization through sales and once they operate there, it is this new gained knowledge of the other market that gives them major further advantages such as competitiveness and innovation abilities (see chapter 4.3.1).

- Organizations in the Danube Region are facing less barriers to internationalize within their region since the psychic distance in terms of language and culture is much smaller. For organizations and cluster members this means that they need to seek opportunities to gain knowledge on foreign markets for creating their internationalization strategies. For cluster managers this means that they need to create for their members opportunities to learn and gain information in order to support them in their internationalization activities. Support that targets the exchange within the Danube Region makes sense especially for organizations that are not internationally experienced yet.

The IET model explains especially the internationalization process of born globals very well. Organizations, who show a rapid internationalization, if born globals or not, often do so because of the international experience, the knowledge, managerial skills and risk taking of the manager or the founder. SMEs, startups and scaleups may have more advantages here since their decision procedures are much shorter and their hierarchies flat. This means for clusters that boosting the managerial and entrepreneurial skills of organizations is not less important for supporting their internationalization than direct internationalization support itself.

66 Tanev, S. (2012): Global from the Start: The Characteristics of Born-Global Firms in the Technology Sector, Technology Innovation Management Review 2(3), pp. 5–8, DOI: 10.22215/timreview/532.

- Although networks are the focus and base for internationalization of organizations, **managerial and entrepreneurial skills for organizations**, especially startups and SMEs are essential to drive these networks and the economic progress in every region. Therefore, the **entrepreneurial skills** need to be promoted and reinforced to enable entrepreneurs to recognize and pursue innovation and market potentials and opportunities on a national and international basis.

### Network model as equivalent to Open Innovation

The Network model explains the way internationalization occurs very well. For organizations this means that they need to identify strategic important networks they can join. For clusters this means that they need to support access to appropriate networks for their members in order to support them in their internationalization efforts.

This examination of the internationalization models shows that the network model, that is equivalent to Open Innovation is the most suitable concept for this handbook. Combining the necessary factors of all three models:

- Learning processes and access to knowledge as a necessary asset for innovation
- Networks as a basis of fast access to knowledge

While the network model works best for shaping internationalization strategies for agro-food organizations in the Danube Region, aspects of the other models can contribute to shaping support as well. These are:

- **Market knowledge** (U-Model), which remains a main enabler for internationalization according to the barriers described in chapter 3
- **Entrepreneurial skills** (IET), especially for start-ups and SMEs more general

## 4.3.2 Networks for Scaling Up

The scaling up strategy of an organization encompasses its plan of how to scale its business impact. It describes the type of scaling efforts[67] and distinguishes between two types of strategies applicable for organizations. These are strategies to scale up impacts of organizations and strategies to scale impacts through value creation.

### Scaling up on the organizational level

The strategies described in the following address scaling impact by either growing an organization internally (organic growth and acquisitive growth) or by scaling impact externally by loose organization boundaries.

The figure below describes the scale up strategies and characteristics of impacts of organizations:

| Scaling Up Strategy | Categories | | | Description |
|---|---|---|---|---|
| Impacts of organisations | Scaling impacts by growing the organisation | Organic growth | | Scaling up by increasing the range and distribution of products and services and by opening new subsidiaries |
| | | Acquisitive growth | | Scaling up by acquiring other firms |
| | Scaling impacts beyond organisational boundaries | Dissemination | | Sharing ideas with others using advocacy, open-source change-making and creating social or political movements |
| | | Collaboration | Joint Ventures | Collaborating by establishing a new legal entity (equity-based) |
| | | | Partnerships | Collaborating on a contract basis rather than an equity basis |
| | | | Franchising | Collaborating by establishing a contact between a trademark owner (franchisor) and a local user (franchisee) to produce/sell products or services |
| | | | Smart networks | Collaborating by creating well- coordinated networks centred around a mission, rather than an organisation |
| | Scaling impacts by reducing organisational boundaries | Licensing | | Scaling up impacts by establishing a legal contract between a product/technology owner (licensor) and a local user (licensee) to produce the products/technologies that were initially developed by a licensor |
| | | Merger/sale | | Scaling up impacts by selling equity to another firm |

Figure 14: Scaling through organization growth and impact (Source: Steinbeis 2i GmbH adapted from van Beers, 2014)

67 Van Beers, D., Nazarkina, L. & Roza Grisales, J.A. (2012): Scaling Up Business Impacts on Sustainable Living: Theoretical Framework Report, https://growthorientedsustainableentrepreneurship.files.wordpress.com/2016/07/en-scaling-up-business-impacts-on-sustainable-living.pdf (last access 31.08.2020).

An organization can grow organically by increasing its production, product range or sales, or it can serve new market segments, or through mergers and acquisitions, or the founding of new subsidiaries in other markets. By going beyond its own boundaries and resources, an organization can also grow through collaboration, e.g. in the form of joint ventures, partnerships, franchising and smart networks. In general, it is beneficial for organizations to loosen their boundaries and interact with the ecosystem to look beyond their horizons, instead of building everything on its own.

The strategies involving a loosening of boundaries follow OI principles in the way that they engage with the ecosystem, promote knowledge exchange and make efficient use of all actors' resources. These strategies are numerous compared to what organic growth offers and they are more effective in helping organizations to grow faster.

For both, networks for internationalization and networks for scale up we can say the following:

- Ways and incentives to engage in partnerships and networks is the way to go
- Knowledge on technology and market trends are essential
- Both are best addressed by partnerships and best achieved by OI methods

# 5 How to Put Up a Strategy for Internationalization and Scale Up

An organization needs a strategy that determines how to capture and process all the technological and market knowledge and use it to successfully internationalize and scale up.

Simply put, the strategy to follow is:

- Know what you have and what you need (knowledge, competence and skills)

- Know what your environment can give (market trends and demands, technology availability)
- Position yourself in the ecosystem and
- Build your networks and partnerships accordingly

For this purpose, a strategic management methodology for *clusters positioning* was developed by Steinbeis-Europa-Zentrum ("Positionsbestimmung"). It requires first the "inward-looking" assessing your own competences, then the "outward-looking" to position the own profile in the bigger context[68]. This method is correspondent to the Open Innovation approach suggesting the loose exchange of knowledge inside-in and inside-out, which requires the assessment of the own competences and the ecosystem the same way.

The next three chapters suggest a set of *positioning tools*. Chapter 5.1 and 5.2 for the "inward-looking", 5.3 for the "outward-looking" and 5.4 for the positioning in the ecosystem. These tools can be used by cluster organizations to position themselves. Chapter 5.5 specifically describes how cluster managers can use specific tools to position the entire cluster.

## 5.1 Starting Point: Where Do You Stand?

Organizations who want to internationalize to another market via export as well as cluster managers who want to support their members in internationalization services via export need to be aware of experiences in this process. It is not necessarily a constant or exponential one, since entering an external market remains a challenge for many organizations and requires costs some of them often are not aware of. Market entry must be planned strategically as opposed to an unplanned way, e.g. by responding unsolicited orders[69].

68 Clar, G., Hafner-Zimmermann, S. & Sautter, B. (2014): Strategiekompetenz für mehr Innovations- und Wettbewerbsfähigkeit. Eine Handlungsanleitung [Strategic competence for more innovation ability and competitiveness. An instruction for action], https://www.steinbeis-europa.de/files/181304-strategiekompetenz_ebook.pdf (last access: 31.08.2020), p. 57.

69 Bilkey, W.J. & Tesar, G. (1977): The export behaviour of smaller-sized Wisconsin manufacturing firms, Journal of International Business Studies 8(1), pp. 93–98, DOI: 10.1057/palgrave.jibs.8490783.

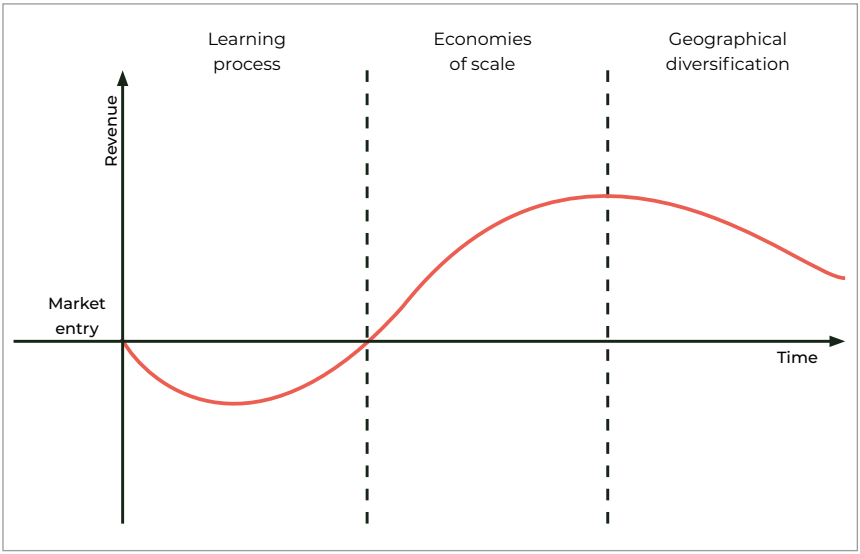



Figure 15: Internationalization of Agro-food SMEs through export (Source: Steinbeis 21 GmbH adapted from Serrano, Fernandez-Olmos & Pinilla, 2008)

A study that observes the internationalization of agro-food companies in comparison to their performance[70], based on solely export as the point of entry to the external market describes the process with a vertical S-curve.

The findings of this study summarize the process of internationalization through export into three phases, and it makes sense to first determine the organization's starting position in one of them.

**Phase 1 – learning:** if you are planning to internationalize via export for the very first time you should know that this step is connected to a high initial cost.

The first phase, shown by a negative slope, describes new exporters, that have recently started expanding abroad. The initial operations across countries create costs for the firms due to "liability of foreignness". Entering an unknown market increases several transaction costs such as seeking information, researching the

70 Serrano, R., Fernández-Olmos, M. & Pinilla, V. (2018): Internationalization and performance in agri-food firms, Spanish Journal of Agricultural Research 16(2), e0107, DOI: 10.5424/sjar/2018162-12206.

market, visiting sales representatives and negotiating arrangements and contracts. Learning about the market and its actors as well as the increased coordination to handle it is costly. Particularly in the food sector, exporters need to comply with different standards and requirements. Especially the logistics involve more risks in this sector since food items are often fresh and perish relatively quickly. All the factors together cause reduced margins, which are pictured in a negative slope of the S-curve.

Even if organizations know and expect that they are going to face reduced margins, they need to have the financial resources for entering the very initial phase. An OECD study on barriers and drivers to SME internationalization confirms that the main barrier of SMES to enter the international market is the lack of capital to finance exports[71].

- Support needed by organizations planning the market entry is knowledge of the foreign markets of interest as well as support in the access to finance. This can be gained through information formats, brokerages and events by clusters and other multiplicators. Participation in international projects is a good way to this information as well. Projects, project partners and consortia should also be chosen strategically according to significant information gained on future markets of interest rather than randomly.

**Phase 2 – economies of scale:** if you already have passed the first phase successfully and are ideally in the second phase you should be well off for the moment financially and about to exploit financially your new market.

The second phase, shown by a positive slope, describes exporters who are about to intensify the international process and earn positive benefits from an increased amount of business. Here the "economies of scale" take place, the activities reach higher volumes, and these bring an advanced cost reduction. These positive effects of international expansion occur once the firm has passed the threshold of necessary business. Apart of sales volume and reduced costs, the firm has gained experience in exploiting also other nearby markets.

71 OECD (2009): Top Barriers and Drivers to SME Internationalisation. Report by the OECD Working Party on SMEs and Entrepreneurship, http://www.oecd.org/cfe/smes/43357832.pdf (last access: 31.08.2020).

- Once operating already internationally, organizations face the circumstances in the foreign market and need to sustain themselves and moreover stay competitive. They are concerned with questions like better quality to lower price and at the same time they experience and handle the initial internationalization costs. At this stage support should focus on ways to reduce the initial costs and to innovate on the foreign market. These points can be addressed by innovation management. Process and product innovation of the exported product or technology can lead to lower price and/or higher value of it and certainly to competitive advantage on the foreign market.

**Phase 3 – geographical diversification:** if you have successfully exploited the foreign market potential of the second phase and plan to go further and diversify, you should be aware that this step can lead to a cave in of your business.

The third phase, shown by a return to a negative slope, describes exporting companies whose export and geographical diversification have grown to the extent that they face additional costs arising from greater management. They return to a negative effect on their performance. Stronger geographical dispersion increases managerial demands and coordination between different units. Firms face incremental costs of further expansion to bordering markets when they over-disperse or over-expand[72].

- Organizations in this phase need strategic organizational support in the geographic expansion and scale. The major focus of services are managerial and entrepreneurial skills assigned to opening to new markets, especially for SMEs who lack these kinds of resources most. Scalability of resources has a lot to do with organizational management as at this stage proactive adaptation of already operating patterns from already known markets to new ones is a precondition enabling international diversification[73].

72 Johanson, J. & Wiedersheim-Paul, F. (1975): The internationalization of the firm. Four Swedish cases, Journal of Management Studies 12(3), pp. 305–323, DOI: 10.1111/j.1467-6486.1975.tb00514.x.

73 Cieślik, J., Kaciak, E. & Welsh, D.H.B. (2012): The impact of geographic diversification on export performance of small and medium-sized enterprises (SMEs), Journal of International Entrepreneurship 10, pp. 70–93, DOI: 10.1007/s10843-012-0084-7.

## 5.2 Identify What You Have and What You Need

For identifying which knowledge and skills you need, you must analyse what you have, which competences lie in your organization. The analysis of the organization – the "inward-looking" – is to identify innovation and knowledge competences and innovation and knowledge short comings, such as missing ideas, assets, knowhow for the use of radical new technologies.

**The most important questions** for this analysis are:

- Which internal groups are involved in the innovation process?
- Which external groups are involved in the innovation process?
- Which external sources are used in the innovation process?
- Which is the value chain, which is the main product or technology in the focus?
- Is the organization technology driven or market driven?
- To what extent does the organization cover a specific stage (or level) of the value chain?
- Which are the assets of the organization in these areas?
- Which technology fields are significant for the value chain?

### 5.2.1 Innovation Value Chain

#### What it is about

The innovation value chain[74] is a tool to improve an organization's ability to innovate. To improve the organization's ability to innovate it pictures the process of transforming ideas to outputs. The process is described by three phases: idea generation – idea conversion – idea diffusion. The phase of idea conversion can be

74 Hansen, M.T. & Birkinshaw, J. (2007): The Innovation Value Chain, https://hbr.org/2007/06/the-innovation-value-chain (last access: 18.06.20).

broken down further into the selection and development process, which makes sense for having a more specific insight of the product development.

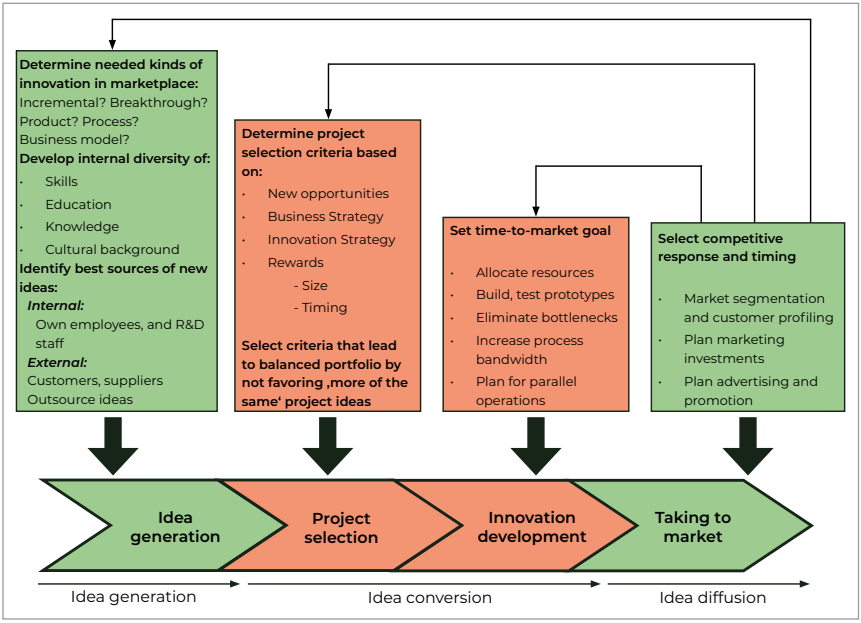



Figure 16: Innovation value chain (Source: Steinbeis 2i GmbH adapted from Gabriel, 2012)

## Idea generation

This phase stands for where the ideas come from. This can happen anywhere, within the organization, within or across teams outside the organization. Organizations need to assess if they are producing enough good ideas. It is also necessary to assess how the ideas are produced:

- Which teams or sectors are involved in them?
- Are there any cross-unit collaborations, such as R&D and marketing?
- Are there collaborations with players outside the company, such as end-user, suppliers, universities?

If they spend too many resources – time and money – developing either poor potential ideas or too few good ideas, organizations are weak in this phase.

### Idea conversion (project selection and innovation development)

Here ideas are evaluated against the innovation strategy of the organization through intensive screening. Then ideas are selected for development. Resources are allocated for the development, which includes development steps such as experiments and feasibility, tests of the concept and first application. When ideas after selection for funding die too soon and do not make it to an output, the organization is diffusion-poor and needs better screening capabilities and mechanisms.

### Idea diffusion (taking to market/implementation)

Concepts that have been selected, developed and funded need to be employed in the market. The company will put up a marketing strategy, including the relevant markets and channels and the idea is properly rolled out.

### How it is used

The innovation value chain can be used to see the innovation culture of an organization, to identify if areas within the organization are open, which areas are open beyond the organization boarders and suggest Open Innovation tools to a) improve weaknesses and b) to find profiles of potential partners that would be needed:

Ask yourself on each of the phases of your innovation value chain:

- Who is involved?
- At which point and how can you include in this step inputs from outside the organization and/or inputs from outside of your country?

Open Innovation and network creation tools can be applied to act on international level and build networks.

In idea creation: use inbound and coupled creativity: e.g. crowdsourcing, brainstorming workshops, competitions with invited groups, connect with networks, connect with other organization units of different background and skills.

In idea conversion: use inside-out and outbound creativity: ideas that are not selected for funding can be used by other organizations.

In idea diffusion: which networks and channels can you use to spread and market your product or service to the geographical and sectoral markets of your preference?

### Benefits for internationalization and scale up

The innovation value chain is not a tool for internationalization or scale up per se, but it can be applied for some aspects of internationalization and scale up. The respective activities can take place along the whole innovation value chain beyond export and import activities. The tool can help you for the following aspects:

- To identify the internal innovation culture of your organization, e.g. if innovation is happening openly or rather traditionally and closed. An open innovation culture contributes to more and quicker ways to innovation in general as chapter 4.2. has described. This increases the access to skills, market knowledge and technologies to scale an organization's activities.
- Beyond export and import as modes of internationalization, you can benefit from international markets and partnerships by other means along your entire innovation value chain (idea generation, conversion and diffusion). This tool helps to envision ways to do so.

## 5.2.2 Competence Matrix

### What it is about

The Competence matrix is a tool that has been developed by Steinbeis 2i GmbH. It is not a new tool as such, but it includes elements of the value chain analysis. The aim is to capture in one picture the core business of the organization, its assets, the technology fields and markets that are relevant for the organization.

The matrix lays out the competencies of the organisation with respect to the elements of its internal value chain, its knowledge and other assets, the technology fields influencing its operations and potential user markets.

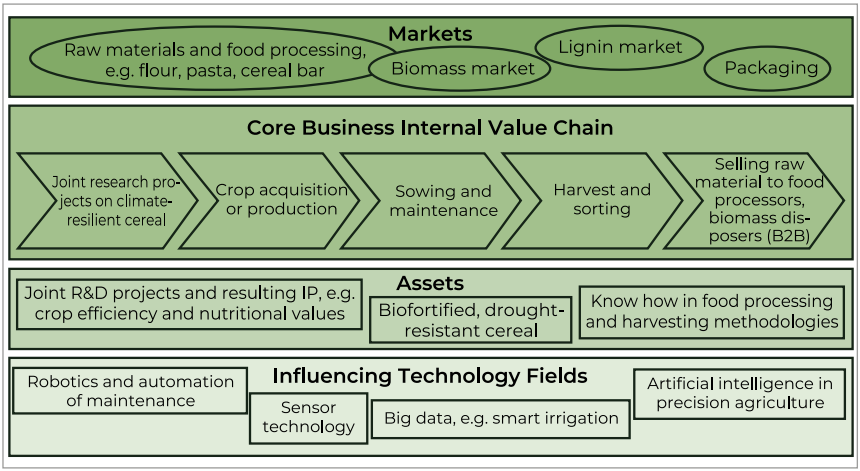



Figure 17: Example of competence matrix for agro-food organisation (Source: Steinbeis 2i GmbH)

### How it is used

**Step 1:** Define your core business, which is the **components of your value chain**, which is divided into the upstream value-added components, main value-added components and downstream value-added components. The market can also be part of the internal value chain depending on whether the company is market oriented or technology oriented. Technology-oriented companies tend to be active in

the upper value-added components, whereas market-oriented companies tend to be active in the downstream and market components.

**Step 2:** Define your **assets** and include important knowledge components which have been created within the organisation, e.g. through R&D activities, or are simply available inside the organisation as expertise. They also include intellectual property rights and secrets (e.g. patents or recipes).

**Step 3:** Define the **fields of technology** that affect one or more components of your value chain and the **markets** that that are currently within your scope of activities as well as those that are going to be relevant for you in near future.

**Step 4: Prioritize** all components of the value chain, the assets, technologies and markets you have listed.

Prioritize first by **resource strength:** The strength of the organisation's own resources is assessed based on financial and know-how strength.

Second, prioritize **strategic relevance** based on: The strategic relevance of your organization, i.e. the vision and the organization's goals, of each component in the matrix is evaluated based on innovation

After you have compiled and evaluated all elements, prioritise the different technologies and relating markets to derive recommendations through prioritisation of technologies.

### Benefit for internationalization and scale up

This adaptation of the value chain, your core business with the supplements of your assets, related markets and technologies gives you various opportunities:

- By assessing your core business, you can see which activities can be outsourced to e.g. suppliers. Often a company can produce distinctive products and their competitive advantage lies in importing a specific material from another supplier.

- Clarity about your competences and assets including knowledge of markets and clientele which then helps identifying which competences you may need from outside your company borders.
- Prioritization is of importance as it helps you plan activities strategically.

## 5.2.3 Technology Portfolio Analysis

### What it is about

The technology portfolio analysis is an instrument of strategic technology management initially developed by Pfeiffer[75]. It is used for the systematic evaluation of (new) technologies and provides the basis for strategic investment decisions in favour of economically promising (new) technologies.

This tool offers a look into your technological strengths and strategic visions on the first place and otherwise is evaluated against your perception of the real market. It structures the technologies in a way that you can decide realistic on your strategic plans with these technologies, products or market areas you may want to investigate.

75 Pfeiffer W. & Dögl R. (1990): Das Technologie-Portfolio-Konzept zur Beherrschung der Schnittstelle Technik und Unternehmensstrategie [The Technology portfolio concept for controlling the intersection of technology and strategy of the company], in: Hahn, D. & Taylor, B. (Eds.): Strategische Unternehmungsplanung / Strategische Unternehmungsführung, Heidelberg, Physica.

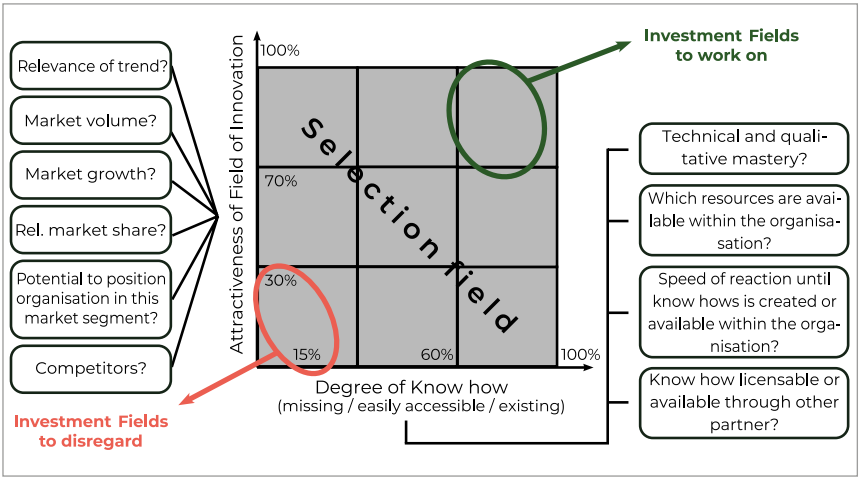



Figure 18: Technology portfolio analysis (Source: Steinbeis 2i GmbH adapted from Pfeiffer, 1990)

## How it is used

The TPF analysis follows the following steps:

Step 1: evaluate the attractivity of the technology based on market trends and your own strategy. Potential criteria include:

- Potential for further development: Which further technical developments and resulting increase in performance and/or cost reductions are possible?
- Range of application: What is the number of possible applications of the technology and the quantities per application?
- Compatibility: What negative or positive effects can be expected in user and peripheral systems (barriers and drivers to innovation)?

Step 2: evaluate your strengths – technical as well as financial – in terms of resources and in comparison to your competitors. The following indicators can be used to determine the strength of resources:

- Technical and qualitative mastery: How do we assess our technology-specific know-how in relation to the competition, do we have a development lead or lag?
- Potentials: To what extent are financial, personnel and material resources available to exploit the existing potential for further development of the technology?
- Speed of (re)action: How quickly can we exploit the further development potential of the technology compared to the competition?

Step 3: analyse the findings and evaluate them against the insights of the extended competence grid. This approach leads to a strategic understanding of the recommended courses on how to go about the technologies, products and/or business fields you took under consideration:

Investment: If a technology is highly attractive in combination with a high resource strength (top right field with technology), a technology should be promoted. Financial resources should continue to be invested in these technologies in order to strengthen the organisation's good competitive position in economically attractive applications.

Disinvestment: Conversely, investment is not advisable if there is a combination of low technological attractiveness and low resource strength (bottom left field with technology). Companies that have not been active in these unattractive fields of technology should not attempt to enter them. Companies that have been active in this field with weak resources should be prepared to switch to superior technologies.

Technology-attractiveness selection: In a position with high technological attractiveness but low resource strength (top left field with technology ), there are two general alternatives for action: 1) exit (or non-entry) in view of weak own resource strength or 2) expansion (or entry) into the technology with massive investments to make up for the existing development gap. It is not recommended to pursue technology development "on the back burner".

Resource-strength selection: A position with high resource strength but low technology attractiveness (bottom right field with technology) carries the risk of mismanagement of financial and human resources. The further development of technologies, which currently still form the basis of numerous products and thus ensure a high inflow of funds in the short term, often ties up a large part of the R&D budget, while knowledge building in new fields of technology is neglected.

### Benefit for internationalization and scale up

The extended value chain and the technology portfolio analysis allow the organisation to assess its technological competencies and overall strengths and against the trends and the perception of the market which benefits internationalization as well as the scale up process.

The analyses provide a structured overview of the relevance of examined technologies, based on which the organisation can review its strategic objectives with respect to technologies, products or markets and adapt its course of action. It helps to identify:

- The knowledge you have – including technology assets, skills, market share, and resources – and which one you need to achieve your prioritized markets. Knowledge you identify as strategically highly important but not inside your company and too risky or timely to establish inside can characterize the profile of partnerships you need.
- Which of the knowledge you have – including technology assets, skills, market share, and resources – is not of major strategic importance to you? You could licence it out and generate revenue for your core business. For this case you would think of other partner profiles, namely such who are interested because they are the buyers and users of this technology or because they pursue a business model that would need this technology.

## 5.2.4 Product Life Cycle

### What it is about

The product life cycle[76] is a concept advocated by economist Raymond Vernon in 1966. It describes the natural life time of any product, which is broken down into the stages introduction, growth, maturity, and decline. Following the theory that products have different challenges and opportunities at any different stage, it is often used as strategic tool for managers and marketing.

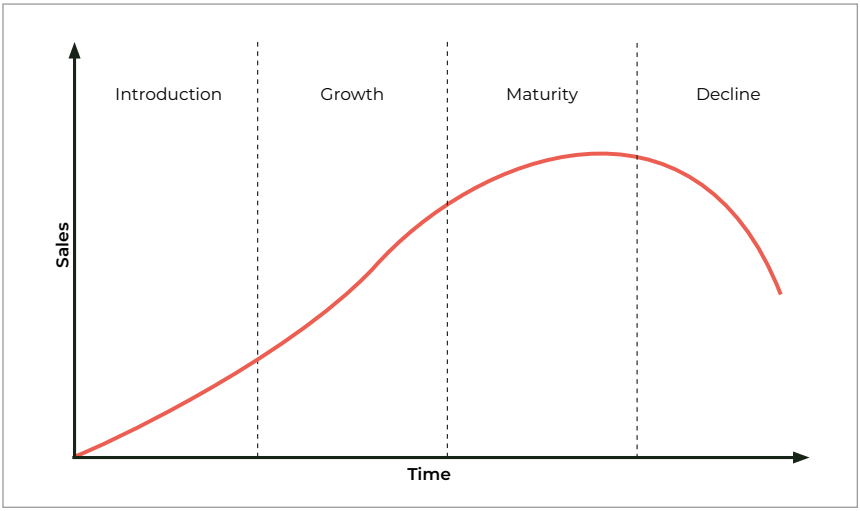



Figure 19: Product life cycle (Source: Steinbeis 2i GmbH adapted from Levitt, 1965)

The model describes four phases:

**Stage 1 – Introduction:** stands for the market deployment of a product. Prior to its deployment it has been proven that there is a demand for the product after fully proven in all technical aspects. At this stage the sales are still low. This phase includes all the initial costs of product launch, especially when the organization

76 Levitt, T. (1965): Exploit the Product Life Cycle, https://hbr.org/1965/11/exploit-the-product-life-cycle (last access: 15.05.2020).

who launches it is a pioneer and not simply copying what another has launched before. "Market has to be 'created' during the product's initial market development stage"[77]. This includes finding distribution pipelines to reach the market segments one wants to address.

**Stage 2 – Market Growth:** Here, the demand begins to accelerate, the size of the total market expands fast and the product starts to grow. When a point is reached, where the demand begins to accelerate, and sales take off, then stage 2 has begun. At this phase, potential competitors may launch copies of your product after having seen that the product works and sells but not wanting to take the initial introduction risks themselves. Therefore, in this phase the so called "product and brand differentiation" begins to develop. Instead of looking for ways to get the user try the product at all – which has been done already in stage 1 – the producer now needs to find ways to make users prefer his or her brand. The new competitors might charge lower prices in order to achieve their brand preference. This phase requires adequate changes in the marketing and pricing strategies.

**Stage 3 – Maturity:** The market maturity stage starts with the first indications that the market is sutured. This means that by now all potential users or buyers of this product already have it. Sales cannot be increased anymore by new distribution channels. The challenge in this stage is to extend this curve before the decline.

Competitive advantage involves mainly making finer differentiation of the product and of the services around it. Depending on the product, offered services and deals are often the clearest and most effective forms of differentiation.

Decisions/strategies that are of importance here are:

- Promoting more frequent usage of the product among current users.
- Developing more varied usage of the product among current users.
- Creating new users for the product by expanding the market.
- Finding new uses for the basic material.

77 Levitt, T. (1965): Exploit the Product Life Cycle, https://hbr.org/1965/11/exploit-the-product-life-cycle (last access: 15.05.2020).

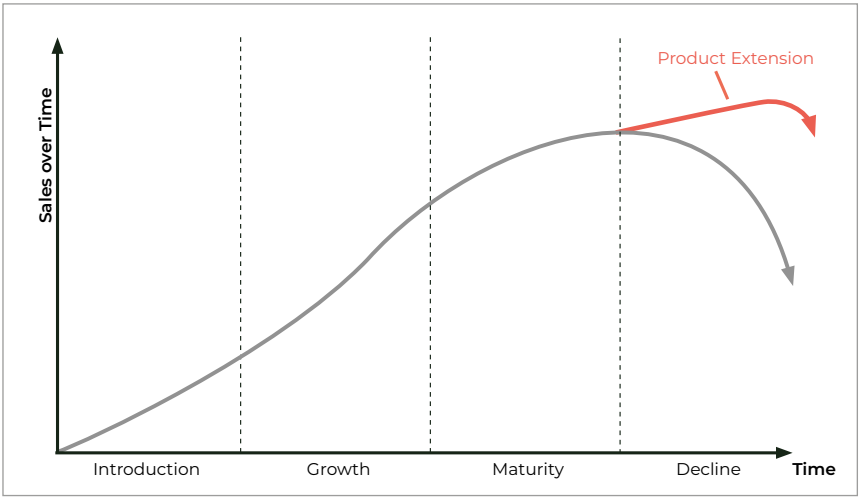



Figure 20: Product extension in the product life cycle (Source: Steinbeis 2i GmbH adapted from Wehr, 2019)

**Stage 4 – Decline:** when the product loses consumer appeal and sales drop, then the product enters the market decline stage.

"Prices and margins get depressed. Consumers get bored. The only cases where there is any relief from this boredom and gradual euthanasia are where styling and fashion play some constantly revivifying role"[78].

While the product life cycle is considered usually from the stage where the product has been launched, it is of importance to consider also the first slope of the curve, the part of the curve that concerns products that are in planning before the market launch:

78 Levitt, T. (1965): Exploit the Product Life Cycle, https://hbr.org/1965/11/exploit-the-product-life-cycle (last access: 15.05.2020).

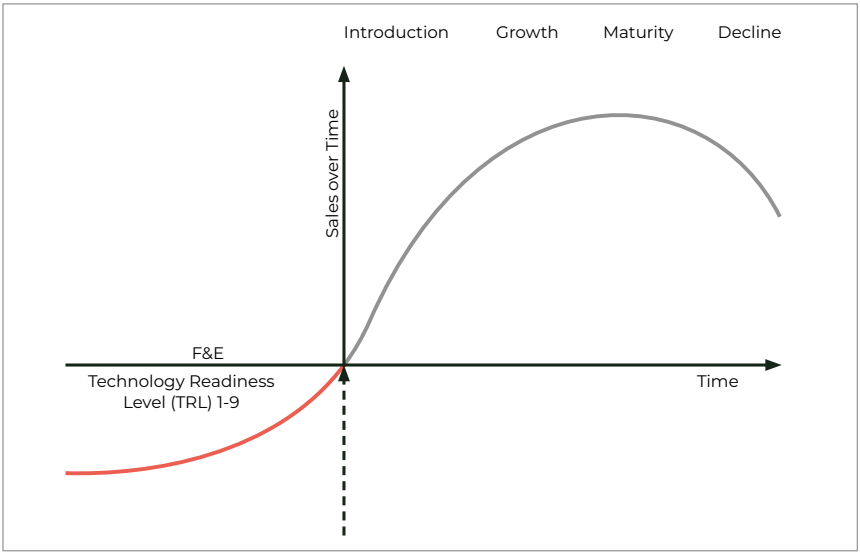



Figure 21: S-slope product life cycle (Source: Steinbeis 2i GmbH)

This should be made according to the Technology Readiness Level (TRL) that describes them. The aim here is to find ways to promote products or services to higher TRLs and/or to promote them from a late TRL into market deployment, which is the stage 1 "Introduction".

This analysis is important so far as organizations can become more sustainable knowing that their current products may go the way the curve assumes and need to take care of staying on the market even if their product declines, but also even if they manage to extend their current product life time.

### How it is used

Generally, when fully exploited, the tool gives you the opportunity to plan, knowing the way the life cycle normally goes and think timely and proactively about new strategies in developing and marketing, always with the aim to extend the lifetime of the product. The tool can become the "basis for important life-giving policies and practices"[79].

79 Levitt, T. (1965): Exploit the Product Life Cycle, https://hbr.org/1965/11/exploit-the-product-life-cycle (last access: 15.05.2020).

### Benefit for internationalization and scale up

Products or services have different needs according to the stage they are in. For strategic partnerships for internationalization as well as for scale up, it matters to see on which stage of the whole curve the products are, as every stage requires other sorts of cooperation. With the PLC analysis you can see:

- If you need partnerships that help diversify the marketing strategy, e.g. when the product is in phase 2 or early 3.
- If you need new users or to create more varied usage of the product and find partnerships in new sectors, especially if your product is in stage 3 and you need to prevent the decline.
- If you need R&D partners to develop the product from an early TRL to a higher one
- If you need first users in combination with funding to test the market and introduce your product.

## 5.2.5 Ansoff Matrix

### What is it about

The Ansoff matrix[80] is a tool for organizations to plan strategic growth. It describes four growth alternatives for growing an organization in existing or new markets, with existing or new products. Each category implies a different level of risk for the organization.[81]

80 Corporate Finance Institute (CFI) (n.d.): Ansoff Matrix. The Product/Market Expansion Grid, https://corporatefinanceinstitute.com/resources/knowledge/strategy/ansoff-matrix/ (last access 31.08.2020).

81 Business-to-you (2017): Ansoff Matrix: How to Grow Your Business?, https://www.business-to-you.com/ansoff-matrix-grow-business/ (last access 31.08.2020).

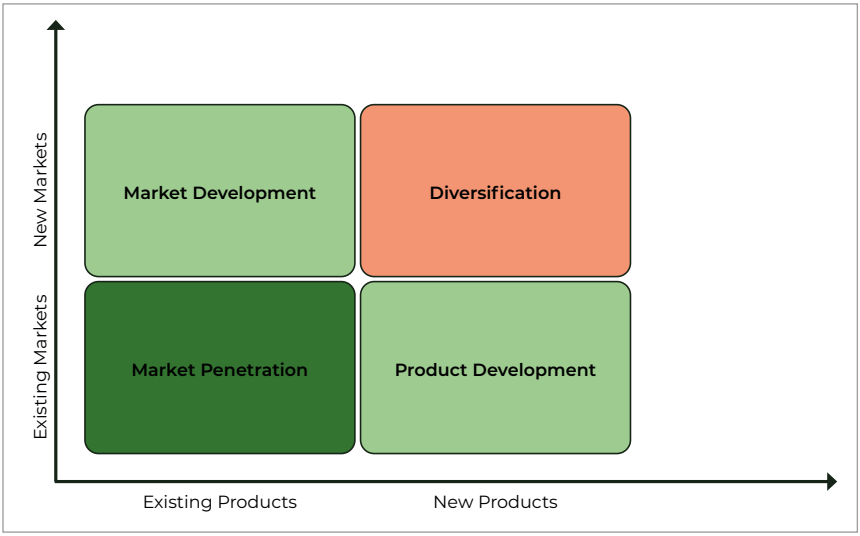



Figure 22: Ansoff matrix (Source: Steinbeis 2i GmbH adapted from Wehr, 2019)

The four strategies of the Ansoff Matrix are:

1. **Market Penetration:** This strategy focuses on increasing sales of existing products to an existing market. In this scenario the organization grows by using its already existing products and services in existing markets. This strategy involves increasing the market share within the existing market segments. This can be achieved by measures such as:
   - Price decrease to attract existing and new customers
   - Increase in promotion and distribution efforts
   - Acquisition of a rival in the same market
   - Modest product refinements to better address user requirements
2. **Product Development:** This strategy focuses on introducing new products to an existing market. Following this strategy, the organization creates new products and services that target its existing markets. This involves extending the product range available to the firm's clients. This can be achieved by measures such as:

- Investment in R&D for new products;
- Acquisition of rights to produce someone else's product;
- Buying in the product and "badging" it as one's own brand;
- Joint development with ownership of another company who need access to the firm's distribution channels or brands.
- Strategic partnerships with other firms to gain access to each partner's distribution channels or brand

This strategy makes sense for organizations who have a strong understanding of their current market and can provide innovative solutions to meet the needs of the existing market.

3. **Market Development:** This strategy focuses on entering a new market using existing products. The organization expands into new markets, which can mean geographic expansion or segments. The organization is using its existing products by using minimal product development. This can be achieved by measures such as:

   - Exploring different customer segments
   - Entering new areas or regions of the country and expand regionally
   - Entering foreign markets and expand internationally

   This strategy is most successful if (1) organizations own unique technology/IP that they can leverage into new markets, (2) consumers in the new market are profitable (i.e., they possess disposable income), and (3) consumer behaviour in the new markets is not too different from the existing market of experience.

4. **Diversification:** This strategy focuses on entering a new market with new products. There are two types of diversification the organization can employ:

   - Related Diversification: there are potential synergies to be realized between the existing business and the new product/market.
   - **Unrelated Diversification:** There are no potential synergies to be realized between the existing business and the new product/market.

While Diversification is the riskiest of all other strategies, Related diversification has a lower risk than the Unrelated Diversification.

For a more detailed view with intermediate steps, you can use a nine-field matrix instead of the basic four field matrix:

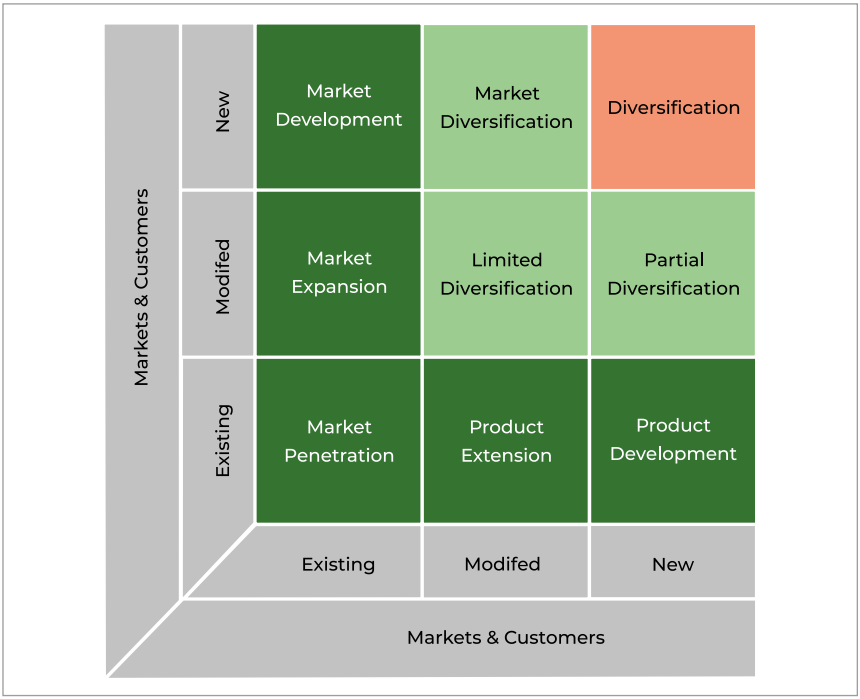



Figure 23: Nine field Ansoff matrix (Source: Steinbeis 2i GmbH adapted from Wehr, 2019)

### How it is used

The Ansoff matrix can help visualizing where the organization stands with its current product range. Scenarios can be drawn for each product or service by contemplating and calculating the risks involved for each potential move to another quadrant. The risks include any risks involved with product or market development – technological, financial and market risks.

### Benefit for internationalization and scale up

The Ansoff matrix can be used for strategic organizational growth and scaling as well as growth of the market share internationally. Especially for scaling up the Ansoff matrix is useful since it gives precise strategies for growing a business.

The tool can be employed

- To elaborate thoroughly the ability of the technology in other sectors and other regions
- To estimate the risks involved and the resources needed in relation to the strategies
- To make a clear picture of the partnerships (new segments, new markets, new customers, new geographic areas) needed for pursuing one of the strategies
- To make a clear picture of the resources needed to pursue one of the strategies (further R&D, funding, licencing partners)

The Ansoff matrix is not sufficient alone but always in connection with the view of market. Sound knowledge of the market is an essential combination for the Ansoff matrix, otherwise it can be misleading in risks estimation. For risk and growth potential estimation on any market – existing, new geographic market, new users- the market must be explored as well. This can be done by a PESTEL or Porter's Five Forces analysis.

## 5.3 Know the Innovation and Market Trends

The identification of the organization's competences and assets by employment of the above tools is useful only by an assessment of the environment – "outward-looking" – at the same time. In order to know your environment, the assessment of market trends as well as the innovation trends and their availability is of importance.

**The most important questions** for this analysis are:

- What does the market want?
- Where are market pressures?
- Are there new technologies available on the market that would benefit or threaten the organization's business model?
- Are there new products or technologies that have been introduced by competitors?
- Which market trends affect my organization?
- Which are my organization's strengths and weaknesses that can benefit or be threatened by market and technology trends?

### 5.3.1 Porter's 5 Forces

#### What it is about

The Porter's 5 Forces[82] driving forces framework helps to analyse the attractiveness of an industry in terms of five forces, which are threat of entry, threat of substitutes, power of buyers, power of suppliers and the extent of rivalry between the competitors.

82 Mind Tools Content Team (n.d.): Porter's 5 Forces. Understanding Competitive Forces to Maximize Profitability, https://www.mindtools.com/pages/article/newTMC_08.htm (last access: 08.09.2020).

The model identifies five forces that can be responsible for a competitive environment and considers five external factors that affect the organization. The five forces determine how strong the pressure is on your organization to innovate in order to lower the threads you face. These five forces are:

1. Competitive rivalry: is determined by the number and the strength of the rivals who surround you. How many are there, do you know them? Do you know the quality of their products and services? When rivalry is intense, your suppliers as well as your clients can go to a competitor and you will have the pressure to innovate either with higher value of the product and/or with a better pricing strategy.

2. Supplier Power: is determined by how easy it is for your suppliers to increase their prices. Are there other innovations and technologies that can be accessed by suppliers? How unique are your suppliers' products and how costly would it be for you to switch to another supplier? The more affordable options you have to switch to other suppliers, the less will be the pressure to innovate.

3. Buyer Power: is determined by how easy it is for your clients to switch to a cheaper or better alternative and/or to drive down your prices. How many clients do you have and how strong is their position to weaken yours? The more customers you have the less will be the pressure single buyers can put on you.

4. Threat of Substitution: is determined by how likely it is for your customers to substitute what you do by e.g. another technology that makes yours irrelevant. Innovation pressure comes from the thread of disruptive technologies that are available and accessible. Are there any you expect to come? How mature are they?

5. Threat of New Entry: is determined by the likelihood of the market entry of new competitors. Who are the most important competitors, what are their USPs? How easy is an entry in your market for them? If your business is based on easily accessible technology, then you have a weak situation and you may lose your position quickly.

### How it is used

Step 1: apply Porter's 5 forces to the geographical market or sector you plan to reach through internationalization or scale up. Brainstorm the aspects regarding your situation and identify all potential threats according to the indicated categories.

Step 2: identify how strong the specific threats are on you by ranking them.

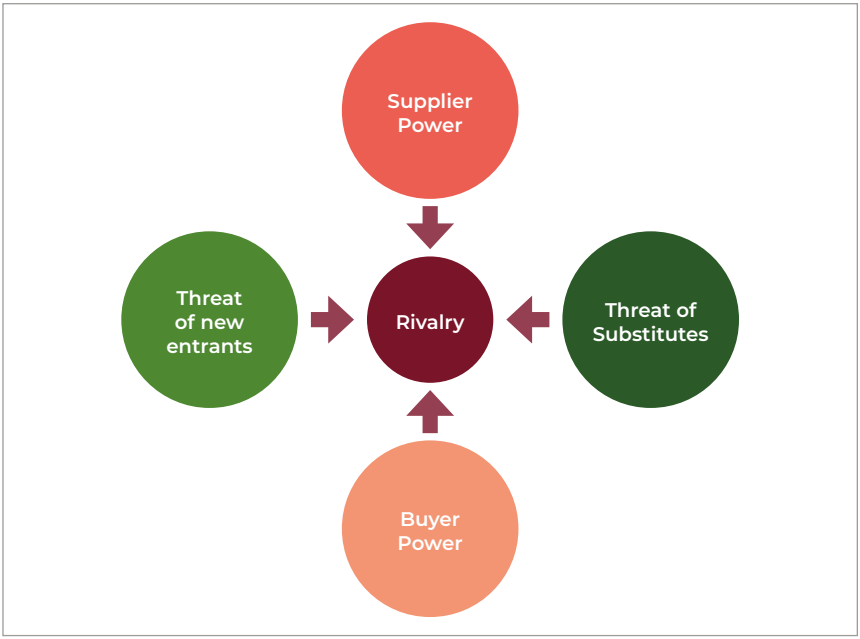



Figure 24: Porter's 5 forces (Source: Steinbeis 2i GmbH adapted from Porter, 1980)

### Benefit for internationalization and scale up

This tool can be used to identify

- Potential risks in specific geographic or sectoral markets in which the organization plans to establish itself

- Potential impacts for the internationalization and scale up strategies and efforts of the organization, e.g. in focusing on quality differences or seeking partnerships with the most or least powerful competitors. If a market already has many competing players, the organization may want to focus on a niche segment.

## 5.3.2 PESTEL

### What is about

A PESTEL[83] analysis is a framework used to analyse macro- environmental factors that can have an impact in an organisation's performance and give a clear understanding of the market. PESTEL is a methodology that helps the organization scan the environment and the way it can affect or benefit its strategic choices. The better an organization is able to respond or react on them, the better it will be prepared, the less its business will be on risk.

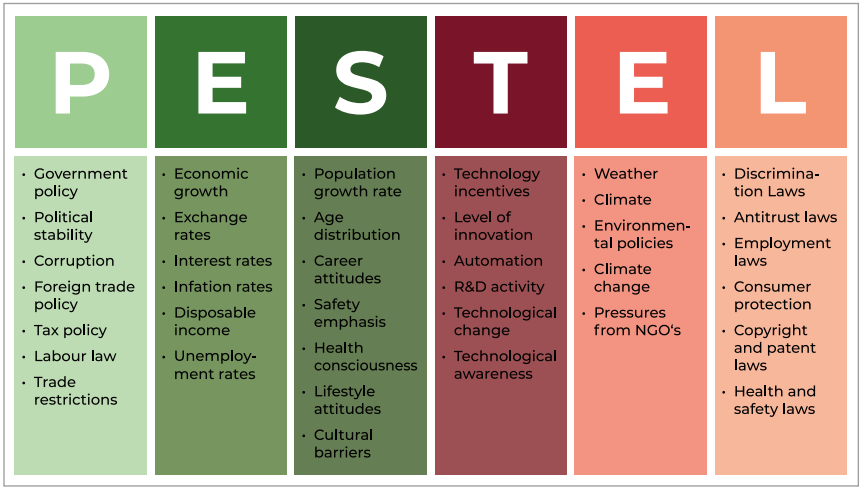



Figure 25: PESTEL analysis model (Source: Steinbeis 2i GmbH adapted from Aguilar, 1967)

83 Gray, B. (2016): How to Effectively Conduct a PESTLE & SWOT Analysis, https://www.linkedin.com/pulse/how-conduct-pestle-swot-analysis-byron-gray (last access: 31.080.2020).

PESTEL stands for Political, Economic, Social, Technological, Environmental and Legal factors.

- Political: This factor represents the way the government influences the economy and businesses. This could be at the federal, state or local level. Considerations include factors, e.g. a potential change of government, unstable government due to the balance of power, tax law, changing policies, labour laws, and trade restrictions.
- Economic: Factors that may influence your business plan include inflation rates, interest rates, economic growth, exchange rates, and property prices. Economic factors differ for each region, city or county and must be analysed for their impact on your business.
- Social: This factor refers to demographic factors, including population growth rates, cultural aspects, age distribution of population, and changing social behaviours; e.g. people using social media applications to discuss products and services. Many of these factors may impact the way you do business with your clients and the methods of interaction you may have.
- Technological: This refers to the rate of technological changes and Research and Development (R&D) activities, automation, and incentives. These factors influence outsourcing decisions, quality, and efficiency considerations. Some examples include mobile internet, tracing technology and smart sensor systems, emergence of Artificial Intelligence etc.
- Environmental: This refers to all the factors directly related to, influenced, or determined by the surrounding environment. This could include weather and natural disasters, geographical position, climate changes, and sustainability. Think about the apparent increased frequency of natural disasters (floods, drought etc.) and their impact on the business and future planning of many affected businesses.
- Legal: This factor refers to all the laws directly connected to a business or company and its area of activity.

### How it is used

Step 1: Brainstorm to all PESTEL factors and list all factors that can affect your business.

Step 2: Identify the implications of each PESTEL factor on the business, you can rank or rate them. You can do this by assessing their impact over time (short, medium and long-term), impact by type (positive or negative affects), and impact by dynamics; i.e. the significance/importance of the implication increasing, decreasing, or remaining unchanged.

Step 3: Rate the impact and likelihood

Step 4: Rate the potential impact on the business, high – low, and the likelihood of it happening, low

### Benefit for internationalization and scale up

PESTEL can be used for analysing any market where the organization intends to operate, that is why it also useful for considerations to enter any new market and trends. It also gives inspiration for new products and services in new international markets. In combination with other tools like SWOT and Porter's five forces, it can give a sound basis for internationalization decisions.

## 5.3.3 SWOT

### What is it about

SWOT[84] is a tool to analyse Strengths, Weaknesses, Opportunities, and Threats of and for an organization and will help an organisation to define a direction and strategic objectives for business or innovation activities. It helps interpret the findings of the PESTEL according to the organization's internal situation and estimate them as opportunities or threats.

84 Gray, B. (2016): How to Effectively Conduct a PESTLE & SWOT Analysis, https://www.linkedin.com/pulse/how-conduct-pestle-swot-analysis-byron-gray (last access: 31.080.2020).

SWOT helps you to make an internal assessment (strength and weakness) by looking at the strengths and weaknesses regarding controllable factors within the business. You make an external assessment (opportunity and threat) of your organization by looking at outside forces and influences that are beyond the control.

The questions to ask here are the following:

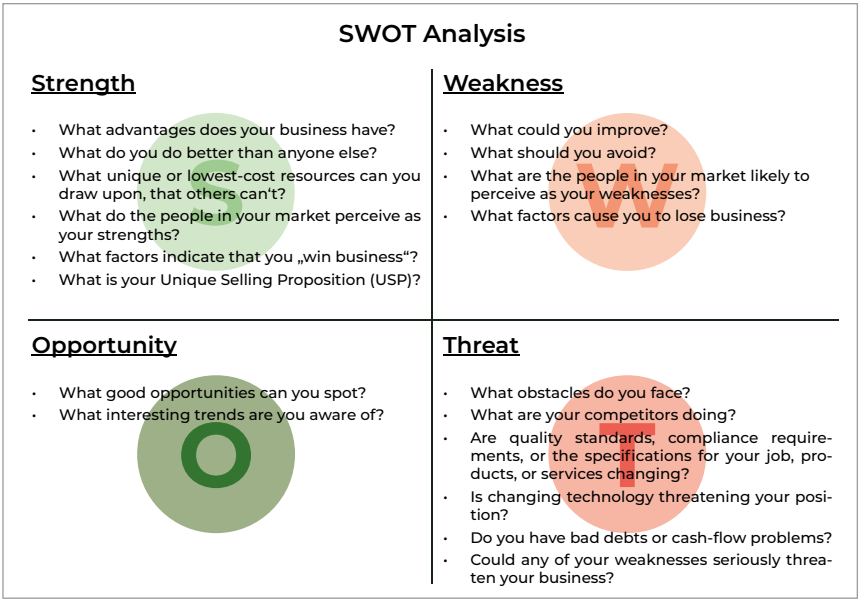



Figure 26: SWOT analysis (Source: Steinbeis 2i GmbH adapted from Gray, 2016)

### How it is used

Step 1: Think about all four categories by asking the suggested questions. Brainstorm about strengths and weaknesses first, then about opportunities and strengths.

Step 2: Prioritize the information and rank the most pressing ones.

Step 3: Use what you have in the quadrants to create strategies and plans. Do a **TOWS**[85] analysis by considering the other way around.

In TOWS analysis you match the external factors (opportunities and threats with the internal factors (weaknesses and strengths). This helps you to make connections between all quadrants of the SWOT and minimize threats and optimize opportunities by your strengths identify the weaknesses to improve in order to deal with threats and opportunities better:

- Strengths-Opportunities: can you use some of your internal strengths to take advantage of the opportunities?
- Strengths-Threats: can you use your strengths to minimize threats?
- Weaknesses-Opportunities: how can you improve weaknesses by taking advantage of opportunities?
- Weaknesses-Threats: how can you work to eliminate weaknesses to avoid threats?

### Benefit for internationalization and sale up

The organisation should make use of its strengths and take advantage of current and future market, technological, financial opportunities that will help to achieve its goals. At the same time, it must be aware of its own weaknesses to be able to improve them and adapt its strategy accordingly. It needs to detect potential threats coming from its environment to better overcome obstacles on the way to success.

## 5.4 Position Your Organization in the Ecosystem

The result of the above steps is a matching innovation ecosystem that applies to a cluster or to an organization. The partner radar is a graphic presentation of the

85 Mind Tools Content Team (n.d.): Using the TOWS Matrix. Developing Strategic Options From an External-Internal Analysis, https://www.mindtools.com/pages/article/newSTR_89.htm (last access: 08.09.2020).

evaluation of the results of both previous steps and contains potential partners for the knowledge and skills needed for internationalization and scale up.

### 5.4.1 Partner Radar

#### What it is about

It is not an analysis tool as such, it rather represents an overall picture of the results from the analysis of the organization and its environment. It visualizes the potential partners and stakeholders for the specific organization or the organization's ecosystem. All types of players, initiatives, networks and others from industry, academia, civil society and policy networks can be listed in any category. Often the categories are not to be seen strictly, as some players can be interpreted in two different functions.

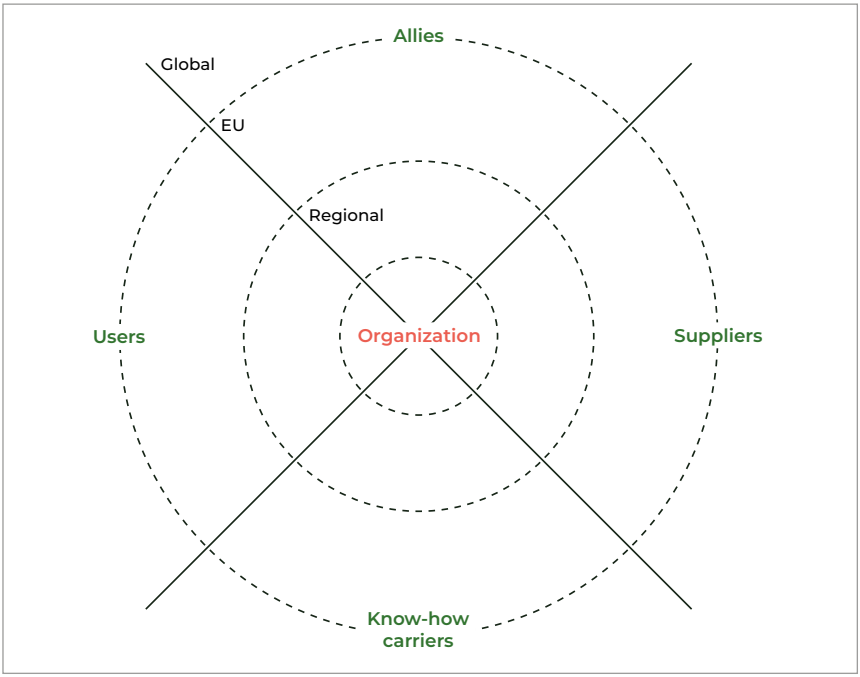



Figure 27: Partner radar (Source: Steinbeis 2i GmbH)

**Allies** are organizations who can be partners to undertake common (economic) activities together, such as joint ventures, common sales of complementary products or jointly develop and market a product together.

**Suppliers** are suppliers of technology parts, additives, materials, services that are used for the organization's area of action.

**Know-how carriers** are players who have know-how in the organization's field, e.g. university or other companies.

**Users** can be clients, end users as well as any other users of the product, technology or a part of it.

### How to use it

Step 1: Analyze the output of tools you employed for inward-looking and outward-looking, weigh it up and decide based on them which knowledge, assets, technologies or skills you need to realize your internationalization and/or scale up goals.

The output of your overall analysis, including conclusions from a combination of the above tools, should have answers on questions like:

- How do you want and how can you go international – by export/import, by R&D in product development, by idea generation with international players (5.2.1)?
- Which are the key technologies, assets and skills you need to scale my business? In which region or country are they available (5.2.2 and 5.2.3)?
- Which are the technologies or know-how you need to further develop your product, that is still in an early TRL? Which are the technologies I need to introduce my product in the market (5.2.4)?
- Which kind of organizations can use your product? Which other sectors can be accessed by my product when you undertake low risk and low-cost changes of product development? Is there another business model thinkable (5.2.5)?

- Which opportunities do you have in market y (geographic or sectoral) according to the short and medium-term trends (5.3.2)?
- Where do you need to come up with innovation according to the market pressure (5.3.1)?
- Which opportunities do you have in the market x (geographic or sectoral) according to the strengths of your organization (5.3.3)?

Then brainstorm on which kind of organizations could represent your needs and create profiles describing these organizations.

Step 2: Do a thorough recherche on potential organizations. You can do this research by e.g. the data bank of the Enterprise Europe Network (EEN), which is described in chapter 6.1. You can go through networks, cluster management and chambers who have national and international data bases.

Step 3: Place the names of specific organizations on your partner radar. You can use colors who stand for the strategic importance of them, e.g. dark color – very important, medium color – important, light color – not so important but still worth to look at. You can place them in one of the three circles around your organization name depending if they are regional, national or international.

Your partner radar can involve all kinds of organizations that can be potential partners or can be supporting with their network:

- R&Ds that can support the products' further development
- Organizations that can use internal assets that are not part of the core business of the organization
- Organizations from whom you can buy assets that you need for your business
- Organizations of civil society such as NGOs and associations that can be user of my products or diffuse your services through their social media

The partner radar can also involve other networks and initiatives

- Political actors at all levels in all relevant fields
- Technology platforms, sector platforms and initiatives
- Regional initiatives
- Companies, Clusters and Networks

### Benefits for internationalization and scale up

The partner radar is a basic picture your ecosystem. It can be the source which you can build your networks upon. Your networks will help you having better access to such knowledge.

After having evaluated all inside and outside factors using the previously described tools and after having decided to enter a specific market or segment, you need to find out which partnerships will be necessary and useful in order to access the knowledge competences and other assets you need.

## 5.5 Application of the Methodology on Cluster Management

While basically all tools described under 5.2 and 5.3 can be used by any organization including the cluster management, the tools under 5.2 rather concern organizations who work for profit and/or develop and offer products or services.

The cluster management needs to follow the same strategy to position itself within an international innovation ecosystem in order to offer better internationalization and scale up services to its affiliated members. It needs to analyse the competences as well as the competence needs among the cluster organizations, analyse the technology and market trends and position itself in an innovation ecosystem. Based on this, the management needs to build networks in order to acquire missing competences, e.g. in a future technology field.

The way to go for cluster management is to find out which direction to follow a) from strategic point of view and b) from a trend and market perspective. Taking the core competencies from the competence matrix described in 5.2.2 for example, helps to depict which parts of the value chain the cluster covers and where the gaps lie. The cluster management then needs to define which strategic partnerships will close the competence gaps within their cluster as shown in the following chapters.

### 5.5.1 Competences

Step 1: break down and describe the value chain that applies to your specific branch:

- The core value chain components – e.g. construction, assembling, fitting
- The upstream value chain e.g. material production or sourcing, basic components
- The downstream value chain, e.g. sales channels, b2b, b2c

Then, identify how the single parts of your branches value chain are represented within your cluster. Questions that are helpful for this step are:

- Which parts of the value chain are within the cluster?
- Are the players connected with each other?
- Are the players international?
- Which technology know-how carriers are within the clusters?
- Which markets are within the cluster?

Step 2: brainstorm on the strategic relevance of the input. The strategic relevance is based on the internal strategy of the cluster and at this point independent from trends and market:

- How strong are the competences within your cluster: how many members represent those parts of the value chain, are they international, are they active in R&D projects? You can mark them with blue dots (two dots: very strong/well

represented, one dot: medium strong/medium represented, no dot: not strong/poorly represented).

- How important is the strategic focus of your cluster on those parts of the value chain: how relevant is it for the cluster to develop this part and how important is it to acquire knowledge and competences in these fields. You can mark them with red dots (two dots: very important, one dot: medium important, no dot: low important).

A wood cluster in Germany consists of the value chain shown in the following-graph:

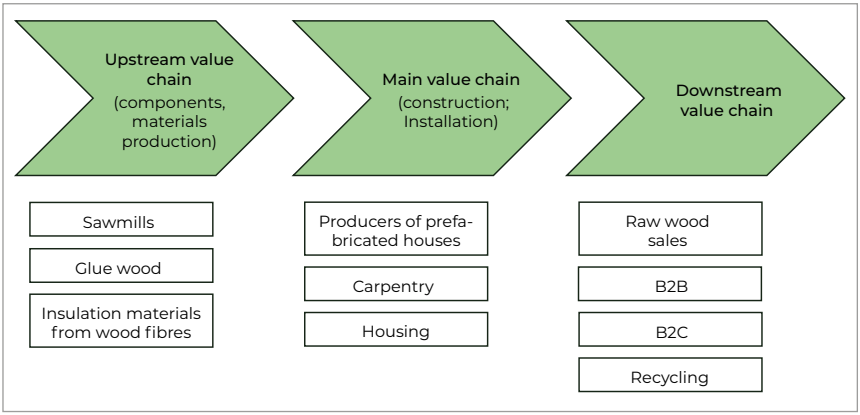



Figure 28: Core competencies of a wood cluster in Germany (Source: Steinbeis 2i GmbH)

Step 3: Prioritize the competence that needs to be further developed. You can take a graph such as the technology portfolio analysis of 5.2.3 and place the results of the value chain analysis according to internal strength and strategic relevance.

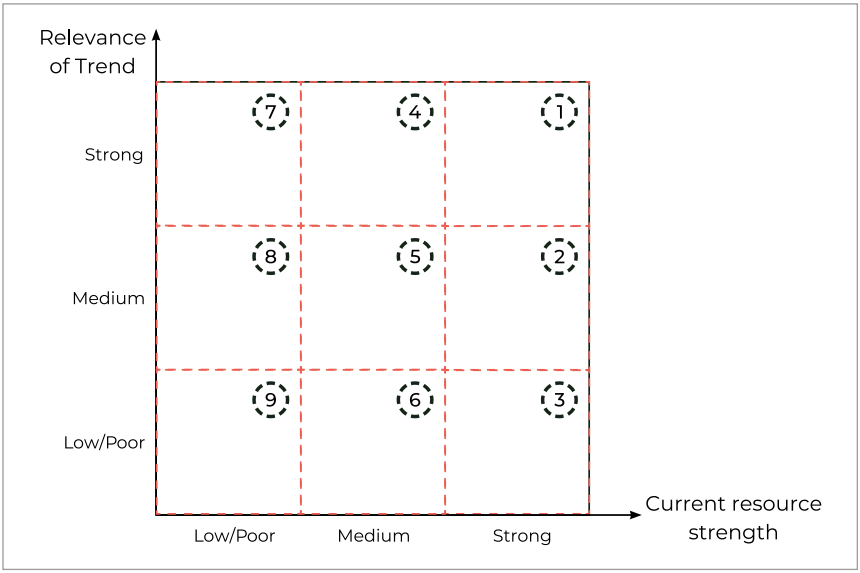



Figure 29: Prioritization according to technology portfolio analysis (Source: Steinbeis 2i GmbH adapted from Pfeiffer, 1990)

## 5.5.2 Environment

In the second phase, the cluster needs to analyse the factors of its environment: technology and market trends. This can best be accomplished by a PESTEL analysis and if necessary, accompanied by a SWOT.

The environmental analysis shows a) which are the trends that are affecting the cluster in a short, medium and long term run and b) how relevant they are for the cluster's strategy.

Step 1: do a PESTEL analysis and prioritize the trends that are affecting the most parts of the value chain and are the most urging to react on. Brainstorm on which trends affect which parts of the value chain and which knowledge, e.g. technologies are the answer to these trends.

Step 2: based on the external relevance of the trends, re-evaluate the prior prioritization based on your internal relevance weigh up and if necessary, adapt the strategic relevance of the competences.

Figure 29 is a tool that shows which knowledge and competences you need to attract into your cluster and which ones you can market your members with:

- Fields with high strategic relevance and low strength, e.g. in the field 7 are those where the cluster needs to bring in competences and try to attract partners and networks that will benefit and complement your cluster members with these competences.
- Fields with high strength and high strategic relevance, e.g. in the fields 1, 2 and 4 are the outstanding USP of the cluster. Here, the management can market the cluster internationally as knowledge and competence carrier to partners and networks who will benefit from it.

### 5.5.3 Position in the Ecosystem

In the same way as it was done for organizations in 5.4, weigh up all the inputs of inner analysis and environmental analysis against each other and decide on which competences, knowledge, markets (geographic and sectoral) you need to complement the needs of the cluster. Then describe partner profiles that will fit best to the ecosystem of the cluster.

Identify potential innovation partnerships and alliances for your cluster in order to meet best the strategic goals of your cluster and in order to extend your networks on national, regional, EU and global level.

Place the potential partners in a modified partner radar as pictured in the figure below:

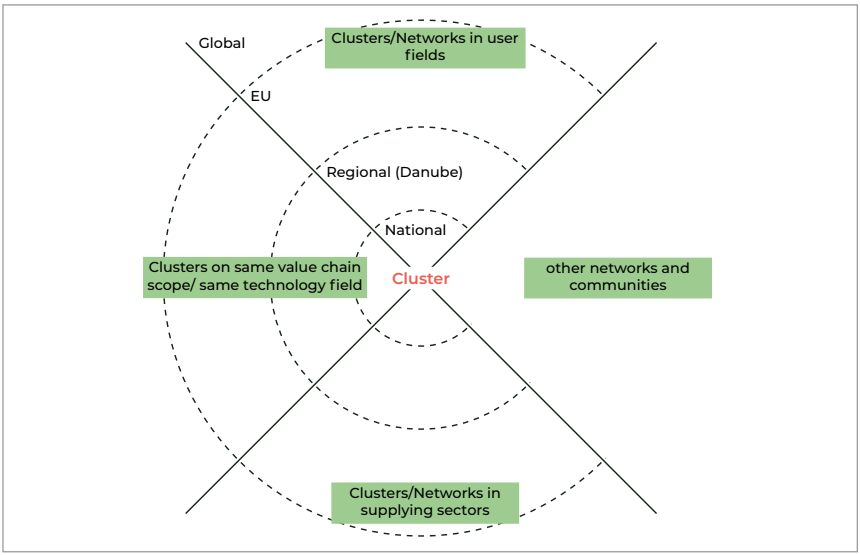



Figure 30: Partner radar is a tool for clusters (Source: Steinbeis 2i GmbH)

Example of the positioning of a wood cluster in Germany is the following:

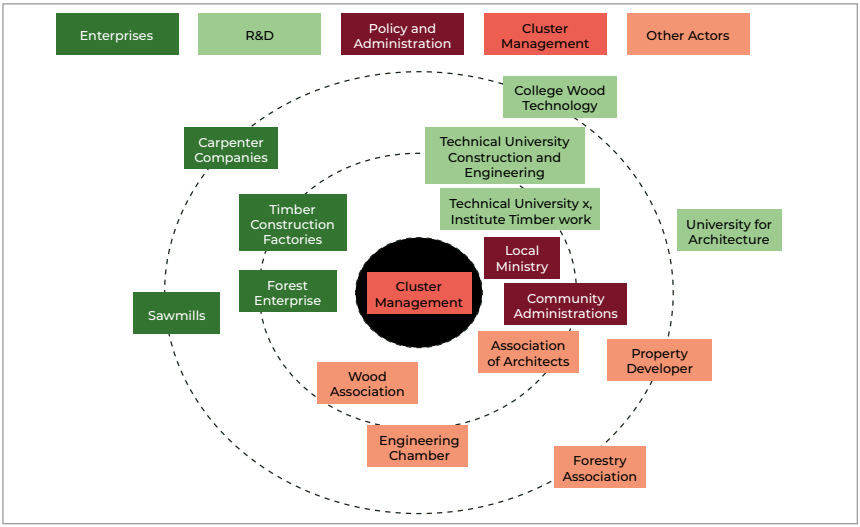



Figure 31: Partner radar of a wood cluster in Germany (Source: Steinbeis 2i GmbH)

Following these steps will prepare any organization for their internationalization and scale up efforts. From this point, the organization needs to choose and build its networks according to the insights gained along the way and the profiles of partners and stakeholders it has defined.

Cluster members and cluster management should perform these activities respectively for their own strategies. Moreover, clusters have a kind of meta position, from which they can act as a major facilitator for network building amongst their existing and new potential members. They have greater visibility on a regional and international level and can therefore attract more contacts. They can also create space for thematic initiatives and projects, through which organizations can better exchange and collaborate.

Both of these subjects – the extended network options for organizations and clusters and the network building of clusters for organizations – are described in the next chapters.

# 6 Building Networks for Internationalization and Scale Up

## 6.1 Use Extended Network Opportunities

Both, cluster members as well as whole clusters, cannot fulfil and achieve all useful linkages by themselves but they both should know where to receive further services and suitable contacts. They should use extended service networks who – in case of clusters – complement the own services to organizations.

**Organizations** can ease their internationalization and/or scale up efforts through involvement in multiplicators:

- Be member in clusters and/or professional associations as you benefit from their networks and share the service costs with other members

- Participate in networking initiatives such as hubs, working groups and other formats
- Look for stakeholders who can direct you in finding R&D or other project consortia on EU level and have data banks with international partner profiles, such as the Enterprise Europe Network which is described below or chambers
- Look for stakeholders who offer trainings and coaching for deepening your entrepreneurial skills, especially if you are a startup or scaleup.
- Most importantly, pursue international R&D funding projects (EU Horizon, Interreg, cascade funding options). Beyond the funding and know-how that will accelerate your organization's business, there is much more for you to benefit from: you gain international contacts. This is a major benefit even in case you may win the bid.

**Clusters**, depending on their goal and size, can eventually offer limited support to member organizations. It is not necessary that clusters provide all potential support themselves though. In order to maximize the range of services, clusters can associate with other stakeholders, signpost members to other service providers and/or cooperate with them by co-organizing combined formats.

Extended network opportunities for agro-food clusters in the Danube region are generally

- Networks and institutes for financial supports – banks, sponsors and business angels, associations networks
- Networks for technology needs assessment – universities, Research Centres, Technology Transfer Centres such as the Danube Transfer Centres (described below)
- Networks offering internationalization services: chambers, enterprise networks such as the Enterprise Europe Network (described below)
- Networks and firms offering consulting services for international R&D and other projects

## Expansion of international partner network through R&D collaboration for EKO-SUSTAV

EKO-SUSTAV Energy efficiency Limited Liability Company (EKO-SUSTAV Ltd) founded by the Vukovar-Srijem County, Croatia in 2008 provides services in managing energy projects for increased energy efficiency. The company has know-how on waste management and conversion to energetic projects in the building sector such as energetic restauration and installations of heat pumps and main partners in their business are builders, architects and planners.

EKO-SUSTAV Ltd took part as a partner in the project ABCDE Posavina (Agricultural Biomass Cross-border Development of Energy in Posavina) that was implemented within the framework of the Cross-border Program Croatia – Bosnia and Herzegovina 2007–2013. The focus of the ABCDE Posavina project was to promote the energy utilization of agricultural biomass in Posavina. The targeted region includes the Vukovar-Srijem County, Brcko District and the municipalities of Samac, Orasje, Odzak and Domaljevac-Samac. The specific objectives of the project were:

- detection of the potential for agricultural biomass utilization in the region
- the Integration of agricultural biomass utilization into regional/ local development plans
- the collaboration and education of farmers
- the promotion of the use of biomass energy for the purpose of sustainable development

EKO-SUSTAV Energy efficiency Limited Liability Company (EKO-SUSTAV Ltd) founded by the Vukovar-Srijem County, Croatia in 2008 provides services in managing energy projects for increased energy efficiency. The company has know-how on waste management and conversion to energetic projects in the building sector such as energetic restauration and installations of heat pumps and main partners in their business are builders, architects and planners.

EKO-SUSTAV Ltd was already well connected in Croatia before the participation in the project and has generally good contacts to forest energy crops and the Croatian wood cluster. The participation in project though enabled the company to **extend its international contacts network beyond the region**, gain visibility and benefit considerably from deeper know-how on waste management from Austrian partners and universities of the consortium. Since the collaboration in this project, EKO-SUSTAV Ltd keeps being approached for further proposal ideas and stays connected in more EU R&D projects, that are for the company 30 % of the organization's turnover.

### Danube Transfer Centers (DTC)

The Danube Transfer Center Network[86] is a powerful transnational structure in the Danube Region dedicated to fostering innovation and knowledge transfer between academia and the economic environment. Present in 10 countries, the DTC Network can provide assistance and support to organisations seeking to improve their competitiveness and international dimension. In each country, one or two gate centers are established, which then create their own local network of offices, in order to be as close as possible to the intended beneficiaries. The members provide technology transfer, intellectual property management as well as management of innovation projects. From 2012 to 2019, the network has established partnerships with partners from Cluj-Napoca, Bucharest, IASI and Craiova (Romania), Nitra (Slovakia), Novi Sad (Serbia), Maribor (Slovenia), Györ (Hungary), Ruse and Sofia (Bulgaria), Vukovar and Zagreb (Croatia), Odessa (Ukraine) and Villach (Austria). The network now counts a total of 14 members.

### Enterprise Europe Network (EEN)

"Business Support on Your Doorstep" is the key statement of the Enterprise Europe Network[87] that was launched in February 2008 by the European Commission's Directorate-General for Enterprise and Industry. Today, more than 600 business support organisations from more than 60 countries help small companies seize the unparalleled business opportunities presented by the EU Single Market. The services of the EEN include:

- **Market access** for SMEs: services relevant to understanding and navigating the Single Market including access to finance, EU laws and regulation (current and future), practical support in accessing new markets and searching for European partners.
- **Innovation services** for SMEs: information on relevant European innovation programmes and regulations, training courses on (open) innovation topics including IPR, financing innovation etc., search for international cooperation,

86 Danube Transfer Centers Network (2020): Danube Transfer Centers Network, http://www.dtcnetwork.eu/ (last access 31.08.2020).

87 Steinbeis-Europa-Zentrum (n.d.): The Enterprise Europe Network, https://www.steinbeis-europa.de/en/about-us/enterprise-europe-network.html (last access: 08.09.2020).

technology and know-how transfer helping clients to increase competitiveness, e.g. by purchasing technological solutions.

- **Cooperative research** in Horizon 2020: support in identifying relevant EU research programmes, building project partnerships, applying for and implementing cooperative research projects.

## 6.2 Encouraging Networks through Initiatives and Projects

### Promotion of clusters for network building of their members

**Encourage networks:** Clusters can strengthen an ecosystem by creating initiatives and networking projects. As it has been described in detail in previous chapters, networks enable, facilitate and intensify the information and knowledge flow and have thus a major influence on the diffusion and adoption of innovations. In relation to this, facilitating collaboration or networking for innovations offers opportunities for new partnerships, markets and allows access to new or complementary competencies and technologies. [88]

Clusters can be an outstanding **motor of networks creation** by initiating networks, that organizations can built valuable partnerships and alliances on. Clusters can be on a local as well as on regional and international basis and may be formal (contractual, institutionalized) or informal (social, trust-based)[89]. In the conceptualization of network building initiatives, clusters should combine:

- Trends relevant for the agro-food sector, set thematic focus and engage other players accordingly
- Cross-sectoral stakeholders in order to capture market potentials and roll out innovative business model ideas
- OI approaches and tactics to promote openness in organizations in order to capture and internalize knowledge and achieve exploitation of knowledge

88 Ng, D., Sonka, S. & Westgren, R. (2003): Co-evolutionary Processes in Supply Chain Networks, Journal on Chain and Network Science 3(1), pp. 45–58, DOI: 10.3920/JCNS2003.x029.

89 Ibid.

They should have the aim to enable members to:

- Access **capital and skills**; such programmes can be accelerator, innovation and incubation programmes, creative hubs, living labs and other similar settings, support in funding schemes
- Contacts with **different type of organizations**, startups, scaleups, scalers, research intensive firms, associations
- Receive **information on foreign markets,** in order to reduce (initial) internationalization costs as
- Get access to **other market segments** with e.g. other clusters and networks, initiatives
- Work in **workshops, roundtables, targeted events** on specific trends or technology novelties
- Cooperate with **key technology providers**, by participating in R&D consortia and programmes
- Get in touch with **societal players** such as NGOS, farmer associations and communities in order to
- Connect with **young talents** through OI challenges and competitions in order to receive new ideas outside your organizational boarders on national and/or international level

### 6.2.1 Examples of Successful Network Building Initiatives with Hubs

Creation of hubs was for example achieved in the projects AGRIFORVALOR[90] and Danube S3 Cluster. The success of the concept of hub building is that they act on a multi-actor approach that encourages exchange and cross-fertilization, and is regional, which reduces psychic distance implies stronger trust base (see U-model theory in chapter 4.3.1) and at the same time addresses individual managerial needs of single organizations.

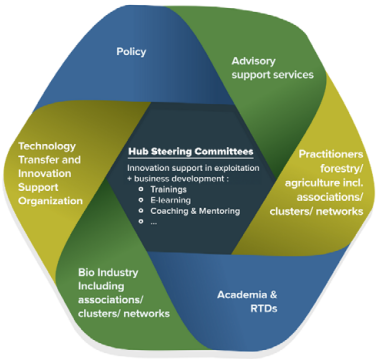
90 Agriforvalor (n.d.): Agriforvalor, http://agriforvalor.eu/ (last access: 08.09.2020).

## Establishment of Biomass Innovation Design Hubs in Ireland, Hungary and Spain

The EU funded project **AGRIFORVALOR** followed a multi-actor cooperation approach realized through the established Biomass Innovation Design Hubs.

**Multi-actor cooperation realized through Biomass Innovation Design Hubs**

- Innovation partnership groups on selected exploitation topics
- Innovation partnership groups on idea to business model development
- Multi-actor projects and operational groups for EIP AGRI




(Source: http://www.agriforvalor.eu/)

Activities of the hubs were to create further working groups:

- Innovation partnership groups on selected exploitation topics
- Innovation partnership groups on idea to business model development
- Multi-actor projects and operational groups for EIP AGRI

AGRIFORVALOR established three multi-actor networks to be managed by the three Biomass Innovation Design Hubs, piloted in Spain (Andalucía), in Hungary and Ireland. In each of these hubs, existing R&D results and good practices on valorization of biomass sidestreams from agro-food and forest were shared and matched with the specific needs and potentials, new grass-roots ideas were collected and developed and dedicated innovation support applied to further deploy selected topics which are dealt with by multi-actor innovation partnership groups. These groups consisted of farmers, technology providers, plant operators and other stakeholders.

### Successful Knowledge Exploitation through follow-up funding

The work at the BIDH lead to significant knowledge and idea exchange among different stakeholders, and joint building of new concepts at the final stage of the project. This led to a successful exploitation of the project outcomes. Four innovation projects were selected, further project proposals were developed and submitted for funding and development at EIP Agri. These projects were the following:

>>

- **Biomass to Biochar for Farm Bioeconomy (BBFB)** aims to pilot the conversion of un-utilised agricultural biomass, arising from management of pasture with rushes and other problem species into stable forms of recalcitrant biocarbon which can, when redeployed to the soil, confer multiple ecosystem benefits, driving an innovative bio-economy on and off the farm[91].
- **Small Biogas Demonstration Programme (SBDP)** aims to stimulate the deployment of innovative on-farm small-scale biogas production by providing support and a capital contribution to three demonstration projects. Research will assist in understanding how biogas can drive sustainability improvements at farm level[92].
- **Small-scale Sugar Biorefinery:** the biorefinery approach converts freshly harvested grass into a range of products, including; an optimised cattle feed fibre, a non-GMO protein concentrate feed for monogastrics, a high-value sugar stream of fructo-oligosaccharides and a grass whey for fertiliser or bioenergy applications[93].

91 EIP-AGRI (n.d.): Biomass to Biochar for Farm Bioeconomy (BBFB), https://ec.europa.eu/eip/agriculture/en/find-connect/projects/biomass-biochar-farm-bioeconomy-bbfb (last access: 31.08.2020).

92 EIP-AGRI (n.d.): Small Biogas Demonstration Programme (SBDP), https://ec.europa.eu/eip/agriculture/en/find-connect/projects/small-biogas-demonstration-programme-sbdp (last access: 31.08.2020).

93 EIP-AGRI (n.d.): Biorefinery Glas – Small-scale Farmer-led Green Biorefineries, https://ec.europa.eu/eip/agriculture/en/find-connect/projects/biorefinery-glas-small-scale-farmer-led-green (last access: 31.08.2020).

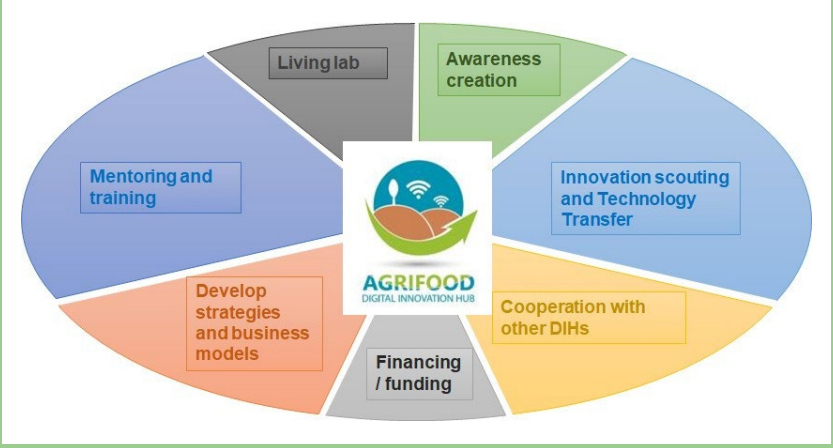
## Establishment of AGRIFOOD Digital Innovation Hub in Slovenia

Having anticipated the needs of the agro-food farming sector, a group of experts established a Digital Innovation Hub AGRIFOOD in Slovenia: a multi-stakeholder cooperation functions as a "One-Stop-Shop".

State of the art: the farming sector must catch up with the fast proceeding innovation technology. Especially the ICT sector gives major challenges as well as great opportunities that lead to innovations in terms of new products and efficient processes. The farming sector still has short comes that prevent them to take full advantage of the digital revolution:

- lack of skills and knowledge in implementing advanced technologies
- insufficient financial capability to invest and procure technologies
- insufficient capability to identify find business opportunities from the technologies
- farmer's needs should be visible and clear in cooperation with the ICT sector

The vision of DIH AGRIFOOD is to become Slovenian and regional leader in development, technology transfer and implementation of innovative smart farming applications and services in areas where it creates maximum value for Slovenian and European Agri-Food system.

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The hub put a set of services in place:

- **Awareness creation** around digital technologies, the way of their implementation, and highlights of their benefits
- **Innovation scouting and Technology Transfer:** Identification and mapping of solution providers on one hand and identification of needs and farmers/food producers on the other hand. The aim and challenge here is to bring technology closer to implementation.
- **Cooperation with other DIHs:** The DIH itself put up an international overview of networks and solution providers, so that the spectrum of potential technologies for the Slovenian agriculture is enlarged.
- **Financing and Funding:** support in detecting financial schemes on EU level to finance the implementation of technologies

Development of strategy and business models for both, farmers who need to see for them a useful business model through the implementation of a technology and companies, mostly SMEs or startups who have technological solutions and need to find business opportunities to apply them.

- **Mentoring and training** for farmers to see more precisely how technologies can change their daily business and lives.
- **Living Lab** brings together use cases from Slovenia and Europe, to showcase existing technologies implemented in real cases.

The approach perfectly shows a successful **combination of internationalization and scale up through open innovation practices in the Agro-food sector**.

**A regional hub that works as a cluster or network** has the strength to know the region very well. At the same time the network itself is networked internationally, so that it can offer to associated companies and farmers a wide spectrum of international contacts.

For the farmers, cooperation with the hub means that through this network they can better access to technologies, finance, knowledge and contacts they would not have been able to make by themselves.

The hub works already with several OI practices:

- Cross-sectoral working groups bring cross fertilization and co creation of new concepts and releases creative ideas and the potential to extend to new markets
- Business model and business development coaching can support models based on license-in and license-out concepts

### 6.2.2 Examples of Alliances by Creating Networks and Working Groups

The networks VLAZ, PLATO and FLANDERS FOOD in Flanders have successfully contributed in **valuable strategic alliances** for food companies. The supported SMEs of the food sector benefitted in not only accumulating knowledge but in exploiting channelled knowledge and turn into outcomes. In particular, the network coordinators implemented following activities[94]:

- Monitoring of the innovation demand of the food SMEs and searched for market and application driven research of them using his regional as well as international contacts to universities, private research centres. They disseminated knowledge via all possible means (newsletters, seminars, workshops). **Application of oriented research through collaborative projects** and individual support of SMEs through consulting services supported the affiliated SMEs to transform domestic and international knowledge into process and product innovations. All types of players related to the agro-food chain were involved in these collaborative projects: producers, technology providers, raw material suppliers, packaging firms. The different aspects represented by the diverse organizations along the food chain enriched the projects and was an add on
- Initiation of **small, targeted networks** or rather **working groups** between very small SMEs and larger firms and between SMEs, where they exchanged experiences. This smaller network or working group met for a period of two years with meetings taking place regularly. Guest speakers gave management know-how to SME managers and acted as mentors. The impact was expected in the long term, but it helped receiving knowledge at the first place. In this trustful atmosphere SMEs could come back and receive feedback and advice on possible transformation of knowledge into innovative results. In this support model, especially micro enterprises of two, three employees benefitted in having access to a so called "board of advice", a sort of shared advisory service.

94 Kühne, B., Lefebvre, V. & Gellynck, X. (2013): Knowledge Exchange in Innovation Networks: How Networks support open Innovation in Food SMEs, http://centmapress.ilb.uni-bonn.de/ojs/index.php/proceedings/article/viewFile/1312/295 (last access: 18.06.2020).

- Established platforms through which SMEs could receive technical advice and implement research in cooperation with a university. The SME with the technical problem would approach the network coordinator. The coordinator then would act as a brokerage middleman between the firm and a specific research institution that is also member of the network. Bilateral exchanges between firm and university allow direct knowledge transfer, making research hands on and applicable in industry. Most importantly, this network made access to R&D accessible to food SMEs.

| | FLANDERS FOOD | PLATO | VLAZ |
|---|---|---|---|
| Focus | Product and process innovation | Organizational innovation | Product and process innovation |
| Strategy | Collaborative projects, individual advise, knowledge dissemination | Group sessions with SME managers and large firms | Bilateral projects between a firm and a university |
| Sector | Food and beverages sector and related companies | All sectors | Specific branch of the food industry |
| Age | 6 years | 21 years | 8 years |

Figure 32: Network strategy of Belgian food case studies (Source: Steinbeis 2i GmbH adapted from Kühne et al., 2013)

## 6.2.3 Examples of Innovation through Multi-dimensional Partnerships

### Examples of business model innovation

New business model ideas came up through cross- sectoral partnerships within the project AGRIFORVALOR described in 6.2.1: multi-actor project teams, involving at least one farmer or forest organization defined 10 Circular Business Models.[95] The best business model who won the best business model award were:

**Organic compost from olive mill residues (Andalusia, Spain) –** The Business model relates to launching a composting plant using sludge from olive mills and

95 Agriforvalor (2018): Business model case studies and methodology engaging farmers/foresters, http://www.agriforvalor.eu/article/Business-model-case-studies-and-methodology-engaging-farmers-foresters-113 (last access: 08.09.2020).

olive leaves. Innovative techniques of composting and vermicomposting will be implemented and result to a high quality, economical organic fertilizer. It can be used in all branches of agriculture. Main customers are cooperatives, oil mills and farmers. Various awareness raising and knowledge transfer activities are the channels to reach out to them with the aim of carrying out a knowledge transfer that contributes to the modernization and efficiency of the olive sector.

**Bark-based Insulation Material (Hungary) –** The Business model refers to the production an insulation material for the construction sector based on bark which is a residue in the forestry and fruit farming. The insulation material is the most environment friendly thermal insulation material similar to what has been used by trees in nature. Environment friendly insulation materials provide $CO_2$-neutral insulation and have high insulation performance. Besides, they provide a lot higher specific heat than traditional foam or fibre insulation materials. The higher specific heat increases the comfort of municipal and residential buildings. Bark insulation materials are not vapor barriers and by this the building can breathe. The main customers are families and companies wishing to build healthy buildings and having an environment conscious way of thinking.

**Small-scale Grass Biorefineries (Ireland) –** The Business model refers to a fresh grass biorefinery model that attempts to improve the usable protein per hectare of grass whilst helping farmers to diversify their product base. As a result, monogastric animal feed is produced, in addition to an optimized cattle feed in which each animal receiving the grass protein fraction can utilise most effectively. The production of sufficient supplies of indigenous protein reduces import-dependency for Ireland. Additional high value products, including pre-biotic sugars are produced in the process. Unutilized minerals such as Nitrogen, Phosphorus and Potassium can be separated in the refinery and reapplied to land as necessary. The unit is being designed with automation to improve opportunities for primary producers or contractors to become bio processors.

## Innovation through cooperation with academia

One major opportunity for new product development in functional food is seen by a review of Khan et al. (2013) highlighting OI as an approach to boost collab-

oration and resource sharing activities between academia and industries, in particular SMEs. "These practices include open source development, collaborative R&D activities, creating alliances, partnerships and heterogeneous networks with external partners."[96]

The German network "Bioaktive Lebensmittel" has the mission to support the development of bioactive products with bringing together partners from economy, science and marketing and bring the products on the market. Beyond the creation of synergies, the network supports these projects by giving access to extended networks and support in the acquisition of further finance. Some of the products realized are[97]:

- **Gluten free amaranth noodles:** a cooperation between the noodle producer Hierl and the IASP Institut für Agrar- und Stadtökologische Projekte at the Humboldt-university in Berlin
- **Protein granulate based on amaranth for sports and weight regulation:** a cooperation between Agilpharma GmbH and the Technical University Munich, institute for brewing and beverage technology, Weihenstephan. Lehrstuhl für Brau- und Getränketechnologie, Weihenstephan

# 7 Conclusions: A Sustainable Internationalization and Scale Up Strategy for Cluster Managers and Cluster Members

Clusters have an outstanding role to support policy in national and regional development and growth by supporting their affiliated members in growing. Growth is a result of successful internationalization and scale up of activities and businesses.

96 Khan, R.S., Grigor, J., Winger, R. & Win, A. (2013): Functional food product development – Opportunities and challenges for food manufacturers, Trends in Food Science & Technology 30(1), pp. 27–37, DOI: 10.1016/j.tifs.2012.11.004.

97 Powerverde (n.d.): Produkte, https://www.powerverde.de/produkte/ (last access: 31.08.2020).

Having agro-food as a main regional strength, agro-food clusters in the Danube region have the challenge to keep their clusters and the affiliated members competitive in their broader international environment. The clusters consist of a variety of organization types with SMEs, including startups and scaleups, research intensive firms, food producers, technology providers and academia, most of them having in common that for going international, staying competitive on the international markets and scaling their efforts they need to innovate and build competences, skills, assets, markets (strategic knowledge) and at the same time they do not have the resources and the time to build them up within their organization boarders.

Organizations can gain access to strategic knowledge through partnerships and alliances with other organizations if they loosen their organization boarders and interact with their ecosystem. Open Innovation is the ideal approach that empowers the access to strategic knowledge to organizations from the environment and supports a quick and successful internationalisation and scale up.

Clusters and policy have the mission to build an innovation ecosystem, in which all organizations can receive the complementary strategic knowledge. They can achieve this by giving services to their members that can help them to identify strategies and internationalize and/or scale up strategically and thus, successfully. Beyond this internal support to member organizations they can achieve this goal by initiatives and projects that create networks such as hubs and informal working groups, where groups with the same interests can exchange and innovate together. Especially the Danube Region has regional advantage in combining nations with similar cultures, which makes interaction and exchange within this region easier.

Clusters can support the ecosystem of their members by building up their own international presence by analysing their competences and competence needs. Extension of networks and internationalization strategy brings visibility gains, markets the competence strengths and attracts competence needs by international projects and collaborations.

When policy, clusters and cluster members work together, the agro-food section of the Danube Region has all potential to thrive.

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Clusters have an outstanding role to support policy in national and regional development and growth by supporting their affiliated members, including a variety of organization types as SMEs (including startups and scaleups), research intensive firms, food producers, technology providers and academia. Growth is a result of successful internationalization and scale up of activities and businesses, but most of cluster members have in common that for going international, staying competitive on the international markets and scaling their efforts they need to innovate and build competences, skills, assets, markets (strategic knowledge). At the same time, they do not have the resources and the time to do all this within their organization boarders.

Organizations can gain access to strategic knowledge through partnerships and alliances with other organizations if they loosen their organization boarders and interact with their ecosystem. Open Innovation is the ideal approach that empowers the access to strategic knowledge to organizations from the environment and supports a quick and successful internationalisation and scale up.

This handbook hence provides tools and examples for cluster managers and cluster members on how to internationalize and scale up, especially focusing on using strategic partnerships, networking and open innovation to reach these goals. Furthermore, the theoretical framework behind those strategic tools is elaborated.

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