

Internal Development Strategies of Partners of Eco-Innovative Services Network: Consortium's Source of Knowledge

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Abstract: In the present paper, its authors present theoretical explanations and summarise developed in the research process stages of creating internal development strategies of R&D entities, offering their eco-innovative services to SMEs, in collaboration with the partners of the created organisational network – also termed as consortium of eco-innovations. These stages included three primary dimensions: I) where a particular entity is at a given moment, II) what the given entity wants to achieve, III) how the entity intends to achieve its intentions? Therefore, twelve common procedures that regulated the development and implementation of internal development strategies were proposed and justified during consultations with all the partners of the network of eco-innovative services ECOLABNET (created in six Baltic Sea Region countries). In the context of the proposed procedures, on the example of the network of eco-innovative services ECOLABNET, the authors have summarised in the form of tables and visualised in the charts activities of all partners so as to compare them, and demonstrate similarities and differences in creating and implementing the strategies of internal development. On this basis, referring to the summarised research results, we have attempted to answer two research questions: 1) What are the similarities and what causes differences in the plans of internal development strategies with regard to economic differences of the partners of the international eco-innovation consortium – implementing a common goal of creating a network of service providers that support eco-innovative actions in small and medium-sized enterprises? 2) To what extent does the information about internal strategies and their implementation by the project partners influence development of accumulated knowledge that ensures: improving the collaboration of the created consortium with the sector of small and medium-sized enterprises and development of eco-innovative initiatives with reference to the needs indicated by the beneficiaries (present and prospective needs)?.

Keywords: eco-innovations, network of providers, strategy, internal development, knowledge of network partners

1. Introduction

Contemporary enterprises, in accordance with the title of the paper the ones that concentrate their activity in the following areas: services, products, eco-innovative technologies, strive at constant improvement of their competencies in the scope of creativity, entrepreneurship, communication, and also collaboration with R&D environment, business, the competitive environment in the coopetition model (Bocken et al., 2014). This collaboration ever more frequently takes formalised forms such as a network of competency interconnections of various groups of entities, among others, Research and Development, micro and small enterprises, intermediary organisations. Simultaneously, these networks lack defined in time and space mutual relations. The contemporary nature of the network is adjusted depending on the competencies of the entities in the area of developing particular eco-innovations – simultaneously in response to the current, frequently only “momentary” market demand. In the group of entities that create networks of eco-innovative services one can distinguish entities that are called “network integrators”. Roles and privileges imposed on them by the remaining members entitle them to act, for example, in the area of eco-innovations, such as: organising eco-innovation networks, increasing pro-environmental awareness in the environment, and at the same time also knowledge of, for example, small and medium-sized enterprises, introducing support mechanisms for eco-innovations (financial and non-financial), or monitoring. An example of such organisations – “network integrators”, are innovation centres, scientific and technological parks, entrepreneurship incubators, among others, start-ups, spin-offs, technology transfer centres. These organisations accompanied by Research, Development and Innovation (RDI) units (the ones that conduct scientific research, design and test prototypes of eco-innovations), and above all jointly with enterprises (commercialisation of results) co-create the value of eco-innovations (Koszarek-Cyra 2016). In the present paper, its authors attempt to determine, and at the same time justify the concept of developing autonomous internal development strategies of individual partners of an eco-innovative services network. Additionally, the authors strive to determine the impact of these strategies on the synergic growth of value of the created eco-innovative services networks (Kuen-Hung and Yi-Chuan 2017), as well as knowledge, which ensures: improving the collaboration of the created consortium with the sector of small and medium-sized enterprises, and developing new eco-innovative initiatives.

The present research results and scientific discourse pertain to the International network of eco-innovative services ECOLABNET, created by service providers supporting eco-innovations. The ECOLABNET network was initiated within the European project Interreg Baltic Sea Region (Project #R077 ECOLABNET of Interreg Baltic Sea Region). The competences of the network ECOLABNET include knowledge in additive manufacturing, bio-based materials, product-service system design, eco-branding, value chain assessment, business model development, legislation, customer insights, certifications and life cycle assessment. The ECOLABNET network created a founding consortium (project partners from six Baltic Sea Region countries, such as: Design Centre MUOVA - Finland – project leader, Centria University of Technology - Finland, Kaunas University of Technology - Lithuania, Vilnius University Lithuania, University of Tartu Estonia, Estrotech Ltd Estonia, Lithuanian Business Confederation, Sustainable Innovation - Sweden, VIA University College - Denmark and authors' university - Czestochowa University of Technology - Poland). Currently, the network includes 41 European entities (dynamic data, as of 31.12.2021), including: project partners (Research and Development Units – RDIs), Small and Medium-Sized Enterprises (SMEs) and Intermediary Organisations (IOs) (Ecolabnet 2022, Kuceba 2021).

2. Dimensions and procedures of internal development strategy of the partners of eco-innovative services network

A common point of reference in formulating the internal development strategies of entities forming the ECOLABNET network is the focus and final orientation on the improvement of cooperation with the sector of, among others, small and medium-sized enterprises - with the aim to develop eco-innovative initiatives, in relation to the needs of network partners, both current and prospective (European Commission, 2014). Based on the literature query and in the context of the topic specified in the title of the paper, it is assumed that the internal development strategies of the partners of the network of eco-innovative services subordinate the activities in the scientific and research sphere as well as in the economic sphere to the implementation of the objectives related to reducing the impact of production activities on the environment. Through such eco-innovative activities that lead to ensuring greater effectiveness of environmental protection and serve to increase environmental and social responsibility in the use of natural resources. These strategies should respond to new forms of networking with research and development units and intermediary organisations to improve eco-innovative services and products for, among others, SMEs, thus responding to current and prospective needs (Bocken et al., 2014, Muller et al., 2017).

Furthermore, it is assumed that the internal development strategies of individual partners of the eco-innovative services network define a set of guidelines for all decisions, actions taken in each area - in a coordinated manner, with respect to both resources and time frames (Kuen-Hung and Yi-Chuan 2017). As a basis for justifying the formulation and adoption of ECOLABNET's internal development strategy for eco-innovative services partners, the identification of three dimensions was adopted: (I) where is a particular entity at a given point in time?; (II) what would the entity like to achieve?; (III) how does the entity want to achieve its intentions? The answers to these questions also constitute structured knowledge about the tendencies of the organisation to design and/or implement eco-innovations, about the opportunities and threats to the transformation of an organisation towards eco-innovations, and about the methods and tools that stimulate the transformation of an organisation into an eco-innovative one. Management of this knowledge in transformation processes is important while formulating the procedures, initiating, creating, implementing and controlling the implementation of the set strategies of internal development. The formulated dimensions of the internal development strategies of the eco-innovative service partners, obtaining answers to the questions and aggregation of the necessary knowledge about the transformation of an organization towards eco-innovative services are the essential motivation, justification of the carried out and described research. Due to the measurement of: the initiation, creation, implementation and control of these strategies in entities that in real conditions form a network of eco-innovative services of an international dimension - in relation to previous studies, this is certainly a novelty.

Accordingly, first of all, it was assumed that each entity while formulating the strategy should determine where it was at a given moment. Referring to the embedding of the very terminology of strategy in the literature, and at the same time in accordance with the subject matter of this article, in response to the question: "where is the entity co-creating the ECOLABNET network at a given moment?", basic activities identified in this dimension were determined. In the group of these activities one can distinguish: 1) formalization of activities through the creation of an independent unit responsible for the development, implementation and control of the strategy; 2) determination of how each entity identifies its basic activities with eco-innovative needs, assigning respectively: a passive attitude in relation to eco-innovations, an active attitude - working with eco-innovations,

a compatible attitude - activities for eco-innovations - integrated with the current strategy of the company, a fully proactive attitude - the mission of the company based on eco-innovations; 3) identification of own internal needs in the field of activating the operation in the area of eco-innovations, considering such needs as: business, financial, development, production and technological, as well as organisational ones; 4) identifying in the subjective and objective grasp the needs pertaining to external support in the field of eco-innovative activities, e.g. what are the reasons for the willingness of particular partners to cooperate and operate jointly in networks of eco-innovative services. Identification of formalization for the activities, identification of attitudes in the previous eco-innovative activities and identification of internal and external needs constitute the justification of the rationale for formulating and implementing the strategies for internal development of the partners of the eco-innovative services network. In another dimension, it has been considered reasonable to identify what each partner would like to achieve when formulating a strategy for the internal development of the partners of the eco-innovative services network. For the transparency of individual network partners' approaches in this dimension, the following activities have been distinguished: 1) identifying competency gaps in particular knowledge areas within the partnership, in terms of theoretical and practical knowledge, know-how, service provision skills, information, technology and infrastructure support; 2) setting directions of actions so as to bridge competence gaps; 3) identifying internal and external sources reducing or eliminating competency gaps; 4) identifying barriers to development and implementation of eco-innovations, among others, in the SME sector; 5) identifying competency gaps of the key partners belonging to the eco-innovative services network, which should be improved first; 6) identifying general areas of cooperation with SMEs (European Commission, 2018), RDI and intermediary organisations in the eco-innovation services network (Marin et.al, 2015). The third determined dimension of developing internal development strategies of the partners of the eco-innovative services network constitutes the answer to the question how the entity wants to achieve its intentions, which is at the same time justified and reflected in the developed strategies. Based on the literature query (Kuen-Hung and Yi-Chuan 2017; Ryszko 2016, Kuceba 2021) as well as the discourse within the eco-innovative services network partners, the general objectives and at the same time the activities that identify the partners of the eco-innovative services network in the literature were adopted (Ecolabnet 2022). In this dimension, the following has been distinguished: 1) research and scientific development of teams in the scope of designing and developing eco-innovative products and services in various fields of science; 2) strengthening the potential of research infrastructure; 3) extending collaboration with intermediary organisations and SMEs in the region; 4) developing a portfolio of eco-innovative services and products for SMEs, taking into account the current and planned research and development opportunities, with the current and planned laboratory infrastructure; 5) permanent and continuous development of the team based on the increase of knowledge, skills, and experience in the field of developing eco-innovative initiatives; 6) applying in heterogeneous competitions for research and development projects, among others, in the scope of diffusion of eco-innovative solutions in SMEs - projects financed by European and national institutions; 7) preparing and conducting training in the scope of increasing the competitiveness of enterprises by raising awareness and introducing eco-innovative activities; 8) developing a common repository of eco-innovative products and services, which constitute a source of professional knowledge on the offered solutions – eco-innovative services.

The answers to the set research questions, concerning the three dimensions of the justification of formulating and adopting the internal development strategies of the ECOLABNET eco-innovation service partners, also reflect the acquired knowledge necessary to define and develop twelve common procedures governing the creation and implementation of internal development strategies (Kuceba 2021). These procedures were this time grouped into four categories: initiating, creating, implementing, controlling ones. They have been visualized in Figure 1.

With reference to the adopted procedures visualized in Figure 1, which regulate the development and control of the internal development strategy on the example of the network of eco-innovative services ECOLABNET, the activities of all partners initiating this network have been aggregated, thus showing the differences and similarities in their development and implementation.

3. Analysis of implementing internal development strategies of the partners of eco-innovative services network

The analysis of the activities with regard to the partners of the eco-innovative service network in the field of initiation, development, and implementation of internal development strategies, in accordance with the adopted procedures, was carried out on the basis of the empirical research in the group of partners (research

and development units) of the International Network of Service Providers for Eco-innovations in SMEs - ECOLABNET. Eleven units can be distinguished in the group of surveyed partners from six countries of the Baltic Sea Region, which include: 6 Baltic universities, 3 R&D units and two companies implementing pilot eco-innovations (Ecolabnet 2022, Kuceba 2021). The choice of these entities was not random, as these are the entities that co-created the ECOLABNET eco-innovation services consortium, being also partners of the project #R077 ECOLABNET of Interreg Baltic Sea Region. Primary research issues have been included in two formulated questions: 1) What are the similarities and what causes differences in the plans of internal development strategies with regard to economic differences of the partners of the international eco-innovation consortium – implementing a common goal of creating a network of service providers that support eco-innovative actions in small and medium-sized enterprises? 2) To what extent does the information about internal strategies and their implementation by the project partners influence development of accumulated knowledge that ensures: improving the collaboration of the created consortium with the sector of small and medium-sized enterprises and development of eco-innovative initiatives with reference to the needs indicated by the beneficiaries (present and prospective needs)?

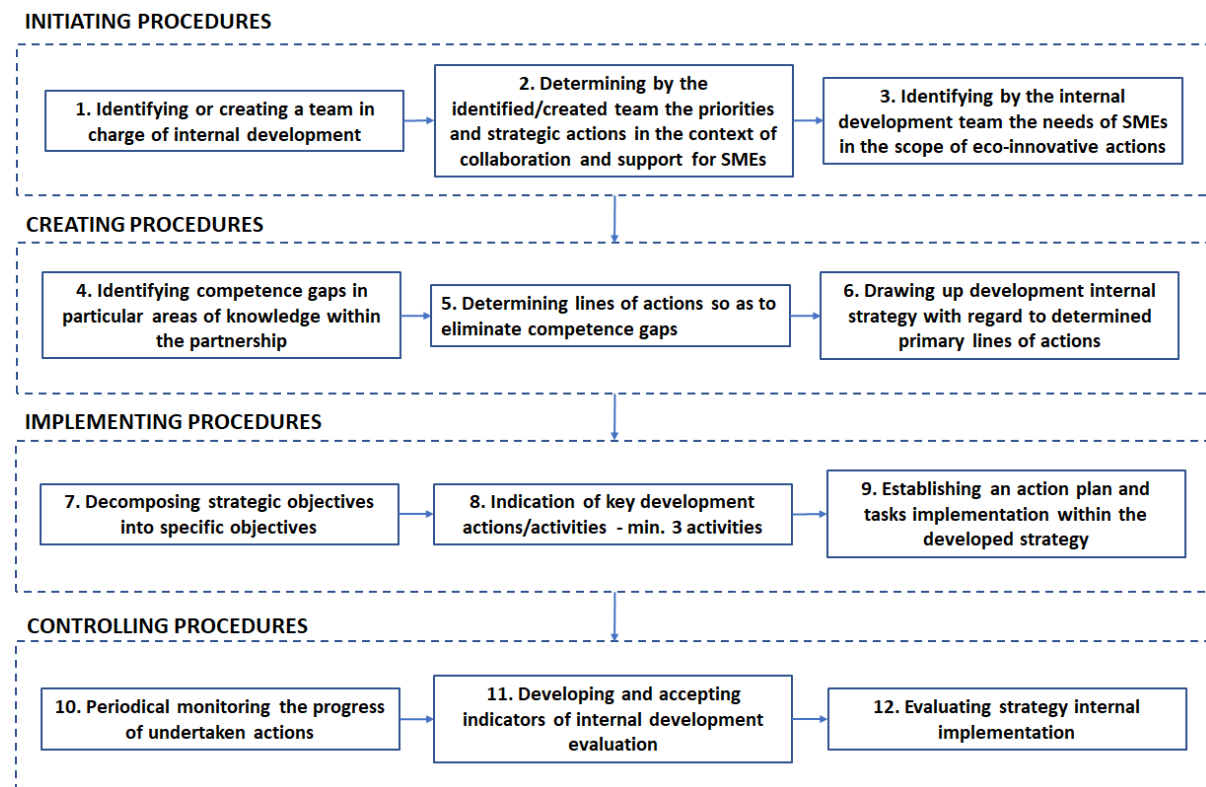


Figure 1: Procedures governing the development and implementation of internal development strategy of the partners of eco-innovative services network

Source: own elaboration

The research was conducted in two stages: 1) Questionnaire research - using a questionnaire sheet "Strategy plan of internal development for ECOLABNET partners" developed jointly by all the project partners during panel meetings. The questionnaire consisted of twelve parts reflecting the procedures governing the creation and implementation of the strategy of internal development for the partners of the network of eco-innovative services. Indications were assigned to each part of the questionnaire, which were proposals of solutions introduced by the project partners during the panel discussion. The questionnaire research was of a quantitative character, each of the examined 11 partners answering the questions in the assigned 12 parts had a multiple choice.

2) Explanatory discourse in a remote form - due to COVID-19 also conducted in a remote form - qualitative explanations of the choice of internal development solutions by each researched partner, conducted during another discussion panel after the end of the first stage. Both stages were carried out in the group of all the participants of the research - partners of the ECOLABNET eco-innovative services network. According to the first

initiation procedure (Figure 1), a team in charge of internal development was formed in all the entities of the ECOLABNET network. These teams participated directly in the development and implementation of internal development strategies on the part of the network partners. Strategies focused on improving the collaboration with, among others, the SME sector and the development of eco-innovation initiatives, in relation to their needs. A common element was the initiation and establishment of such teams for the first time in the investigated entities, with the number of people in each team varying from 2 to 8.

In the context of the second procedure - determining by the identified/created team the priorities and strategic actions in the context of collaboration and support for SMEs, Figure 2 presents a summary of proposed strategic actions identified by the partners of eco-innovative services network ECOLABNET. In reality, thirty-five strategic actions were adopted in total as priorities in the group of investigated group of partners. The presentation includes the ones where the number of indications was greater than half of the investigated entities, $N > 5$.

The key priority for the 10 surveyed entities in terms of strategic actions is to work closely with service providers, to strengthen partnerships and cooperation in the area of research, development and eco-innovations, and to support the SME sector enterprises. An important priority is also developing and synergizing own competencies of the individual project partner in designing and developing eco-innovations through investments in knowledge and skills, and creating their own collaboration networks. The full portfolio of priorities (35), included also individual priority activities - purely related to their individual competencies in the context of local market impact, unique own forms of production, products or services, e.g. general representation and support for the national business environment or in the case of products, support for companies in the fashion and furniture industry, in matters such as business models and testing of materials (which confirms the unique nature of a given partner of the network of eco-innovative services).

The third analysed procedure, which belongs to the ones that initiate strategies of internal development, was identifying by the internal team of the partners of the ECOLABNET eco-innovation services network the needs of SMEs in the field of eco-innovative activities. In this case, it should be emphasised that all the partners in the investigated network, with the use of the same research techniques and methods, identified the needs and barriers of SMEs in their own countries and in total in the partner countries in terms of implementation and diffusion of eco-innovative services. Research on the identification, measurement, and assessment of the significance of the heterogeneous eco-innovation needs of SMEs in the Baltic partner countries, as part of the ECOLABNET project, was carried out in the second half of 2019 (Kuceba et. Al., 2020). In total, $N = 296$ SMEs in the countries of the project consortium partners participated in the research, including: Estonia – 23,31% (69), Poland – 19,26% (57), Finland – 18,24% (54), Lithuania – 15,88% (47), Sweden – 12,84% (38), Denmark – 10,47% (31). Analysing the subject structure of all surveyed SMEs, micro enterprises accounted for 42.23% (125) of the research population, and small enterprises - 27.36% (81). The remaining group - 30.41% (90) are medium-sized enterprises. Moreover, the enterprises surveyed in the BSR countries represented 20 production areas / sectors. When analysing the area of the structure of the studied SMEs, the largest share in the study concerned enterprises from such industries as: Food products 11.14% (33), Other manufacturing 10.47% (31), Machinery and equipment 8.44% (25), Rubber and plastic products 6.41% (19), Wearing apparel and Textiles 6.41% (19), Computer Electronic and optical products 4.05% (12), Paper and paper products 3.71% (11), Fabricated metal products 3.71% (11), Electrical equipment 3.71% (11), Beverages 3.04%.

While analysing the implementation of the fourth procedure, this time in the group of developing internal development strategies of the partners of the network of eco-innovative services, 21 gaps were identified in all the network partners. Figure 3 summarizes the key competency gaps identified, according to the already adopted criterion for visualizing the research results, where the number of indications was greater than half of the number of the investigated entities $N > 5$.

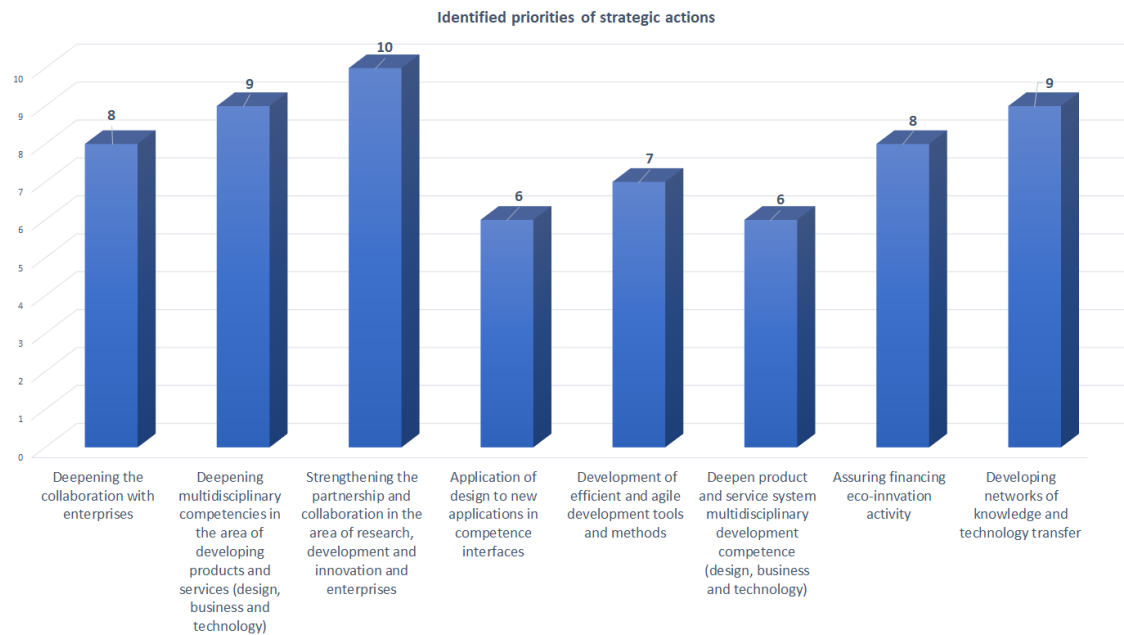


Figure 2: Identified priorities of strategic actions

Source: own elaboration

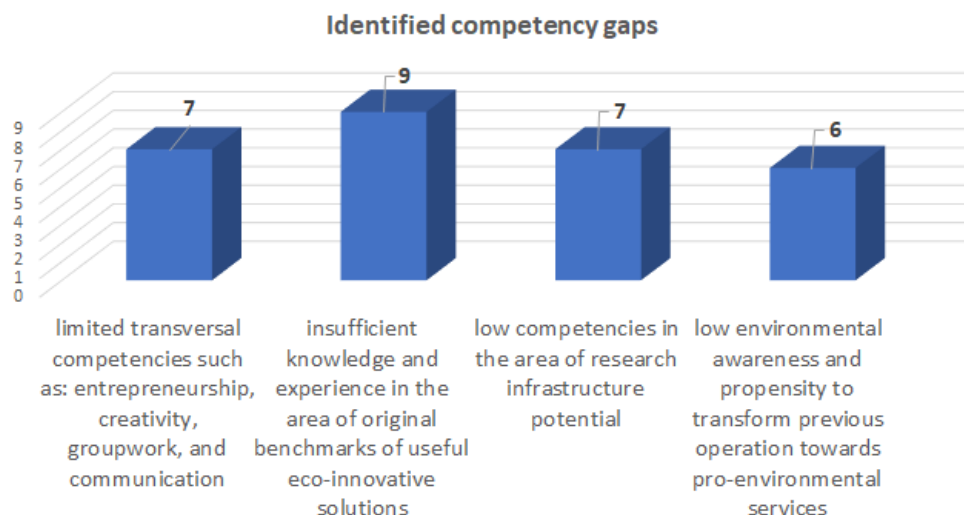


Figure 3: Identified competency gaps

Source: own elaboration

The key identified competency gap of the partners of the eco-innovation services network ECOLABNET distinguished by 9 out of 11 the investigated units is insufficient knowledge and experience in the area of access to benchmarks - useful eco-innovative solutions implemented mainly in the SME sector. The competency gaps highlighted in Figure 3 also include limited existing transversal competences: entrepreneurship, creativity, teamwork, and, what has been emphasised, limited possibilities of access to modern research infrastructure (limited own capabilities). The above competency constituted were the basis for further strategic justification of creating a network of eco-innovative services by the individual ECOLABNET partners. The investigated partners also identify as a competence gap to be reduced at the level of internal development strategies (6 indications) still low environmental awareness especially of SMEs, which translates into still quite low propensity for transformation towards consumption of eco-innovative services offered in the network.

In this context, referring to the fifth procedure (defined at the level of developing internal development strategies of partners - Figure 1), only five partners of the ECOLABNET eco-innovative services network have clearly defined the directions of activities reducing their competency gaps. It can be concluded that among the independently determined activities/directions pertaining to reduction of competency gaps on the part of these five partners, it is important to indicate joint actions within the network, which translates into a synergic increase in the value of developed competencies. The partners of the ECOLABNET eco-innovative services network that indicated activities related to reducing competency gaps - procedure 5, also emphasize the importance of self-improvement of their entities, thus the importance of internal development in terms of improvement. In this case, it refers to the growth of existing competencies in terms of quantitative and qualitative expansion of the portfolio of eco-innovative services, intended, among others, for manufacturing enterprises of the SME sector. An important conclusion, in terms of reducing competency gaps, shaping the approach to developing internal development strategies of the partners of the ECOLABNET eco-innovative services network was indication of the multidimensional nature of activities reducing competency gaps in the following areas: marketing, finance, internal training, infrastructure and diffusion of new knowledge.

Although not all the partners of the ECOLABNET eco-innovative services network identified competency gaps (Procedure 4) and main directions of activities reducing their competency gaps (Procedure 5), all the investigated entities (11) set strategic objectives for internal development. In total, considering all the indications obtained from all the partners, 23 strategic goals were formulated. Due to editorial limitations in this paper, in Figure 4 the authors have summarised the key strategic objectives of internal development from the point of view of the partners of the ECOLABNET eco-innovative services network, in accordance with the previously adopted criterion of research results visualization. The strategic objective summarised include the ones for which the number of indications was greater than half of the number of the investigated surveyed entities $N > 5$.

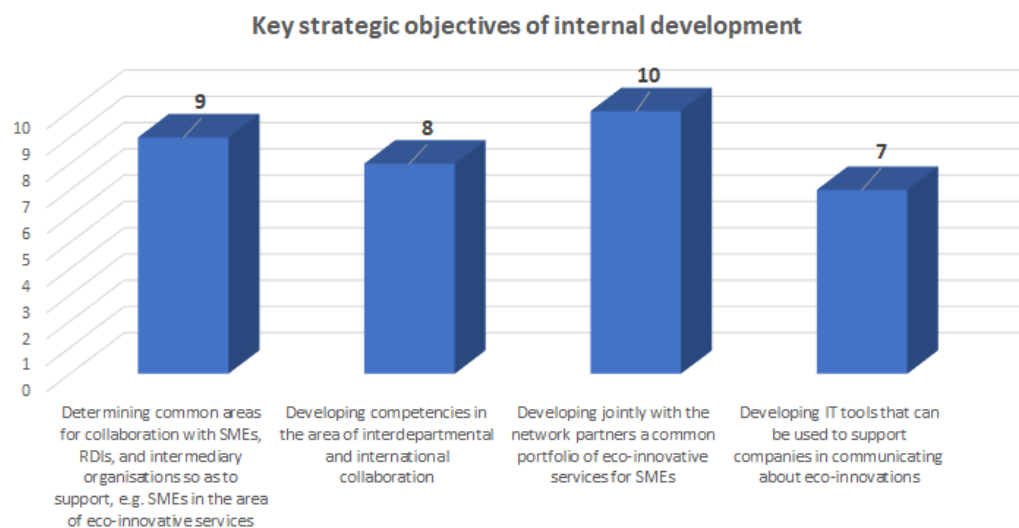


Figure 4: Key strategic objectives of internal development of the partners of the eco-innovative services network

Source: own elaboration

Analysing the summary of key strategic objectives of internal development, the highest number of indications (10) was given to the strategic objective which despite concerning the internal strategies of each partner, opens the entity to the environment, to cooperation in the network in order to develop a common comprehensive portfolio of eco-innovative services and thus expanding the market for recipients of these services. It is important for 9 out of 11 partners to define general areas of cooperation with SMEs, RDIs and Intermediary Organisations to support SMEs in the field of eco-innovative services. It is also important to develop competencies in interdepartmental and international cooperation (8 indications). It is evaluated very positively that formulation of strategic objectives allows us to observe the nature of collaboration virtualization, virtualization of eco-innovative service models through creation of repositories, information portals, digital integrators of the partnership network (Andreadou et al., 2016; Qarabsh et. al., 2020), which supports communication, dissemination of information about eco-innovative services, and frequently their diffusion.

In the context of procedure 7 - implementing - decomposing the strategic objectives into specific objectives, only five partners of the eco-innovation services network have done so. In the process of a comparative analysis, searching for a common framework of specific objectives, the following have been distinguished: research and development of personnel of individual partners, strengthening the potential of research infrastructure, seeking for new sources of funding for research and development of new eco-innovative services. Other specific objectives pertain to increasing productivity or promoting new products, expanding communication channels, e.g. for increasing the availability of services provided by related business structures, and also lobbying to promote and accelerate cooperation between business sectors and business organizations. Specific strategic objectives are also aimed at: branding, promoting the development and availability of the business ecosystem and RDI infrastructure of the partner network. In turn, in the context of the partners' shared portfolio of eco-innovation services, the specific objectives are directed at: defining how to implement, launch, test and operate the digital integrator of the partner network (Kasaei et.al., 2017): a system for collecting and presenting eco-innovative products and services, constituting a source of professional knowledge about eco-innovative solutions.

In the next stage of the research, this time referring to procedure 8 - identifying key development activities, the partners of the eco-innovation services network were requested to indicate at least three key activities that they identify in their internal strategies. As a result, a total of 54 key development actions were identified in the case of 10 out of 11 partners of the eco-innovative services network. Following the comparative analysis, a common framework of key development activities can be distinguished. Conjunctive key activities include: acceleration of R&D activities in the core business areas of the partners as well as acquisition of new competencies, e.g. in the eco-innovative service network. Furthermore, a key activity perceived by the network partners is development of the contacts networks, which correlates with common internal development strategies. A key development activity that also emerges from the comparative analysis of the research results obtained at this stage is the design, development, and creation of a joint service portfolio for the SME sector. In addition to the jointly perceived key development directions, the partners also distinguished those that identify their unique activities in the field of eco-innovative services intended for SMEs, and at the same time, from the perspective of the partner network, extend the competencies of the other actors (Karaarslan 2015).

In accordance with Figure 1, the next step (procedure 9) pertained to the analysis of the plan for implementing the tasks within the developed strategies for the internal development of the partners of the investigated network of eco-innovative services. While analysing these plans it can be concluded that they are differentiated in the context of place and time of implementation, and partly in the context of the planned substantive tasks resulting from the developed strategic objectives. This confirms the autonomy of the internal development strategies developed by individual project teams, despite their cooperation in one eco-innovative service network. Since, in this case, each entity should be analysed separately, this study distinguishes the fundamental steps in the implementation of these strategies, such as: 1) defining objectives and priorities of activities; 2) diagnosing the current level of competency in the field of eco-innovations; 3) development of competencies, strengthening the image of eco-innovations (products, processes and services) through the use of differentiated communication tools; 4) expanding the portfolio of financial and material resources; 5) strengthening the potential of research infrastructure; 6) expanding the portfolio of eco-innovative services for the SME sector; 7) expanding the network of contacts; 8) monitoring and controlling the progress of implementing the internal development strategies 9) identifying risks and taking corrective actions; 10) current and periodic evaluation

The next three procedures implemented in the internal development strategies of the partners of the eco-innovative services network, as visualised in Figure 1, are of a control nature. These procedures were developed by four partners, therefore, according to the recommendation of one of the partners represented by the authors of the paper, the same criteria and control restrictions were adopted in all 11 analysed entities so as to ensure: transparency, openness of the obtained control results, systematicity, periodicity and possibility of comparing the implementation of fundamental common strategic objectives highlighted in this paper in the network. In the case of monitoring the progress of actions undertaken (procedure 10), the common idea was to control and evaluate the current implementation of internal strategies at intervals not longer than one month and periodic evaluation at intervals not shorter than six months. Based on the indications from four partners of the analysed network, 10 most relevant quantitative indicators of internal development evaluation were aggregated (recommended to all 11 entities). The use of the same indicators ensures transparency and comparability of the development of individual partners in the network of eco-innovative services.

The unified indicators (procedure 11) include: 1) number of specialized training/workshops held; 2) number of publications on sustainable development, promotion of pilot eco-innovative services; 3) laboratory base utilisation degree (%); 4) number of acquired partners from business environment; 5) number of developed new eco-innovative products and services for SMEs; 6) number of designed new eco-innovative products and services

for SMEs; 7) number of prepared and submitted project applications for R&D grants; 8) number of R&D projects accepted for implementation; 9) number of developed patents, industrial patterns of eco-innovative services, 10) number of conducted events/training/workshops supporting processes of eco-innovative services transfer to business. It was assumed that the partners of the network of eco-innovative services are free to extend the portfolio of internal development evaluation indicators with other indicators strictly tailored to their own needs. In the context of evaluating the implementation of the strategy (procedure 12), an annual cycle of periodic evaluations was recommended to all the partners. Annual assessments include the evaluation of the quantitative effects achieved, as measured by the determined indicators. The evaluation also concerns the conditions and constraints of the implementation, the correctness of the adopted assumptions and the measurement of the degree of strategic goals implementation.

4. Conclusion

Despite the differences resulting from the mission, objectives, service activities of individual partners of the analysed eco-innovative services network Ecolabnet, common competency gaps, priorities, determinants and directions of internal development strategies can be clearly identified. This confirms the stability and synergy of interdepartmental and international cooperation. An asset that can make the investigated entities and, above all, the eco-innovative services network an example of good practice is the close cooperation with service recipients, strengthening of partnerships and cooperation in the area of research, development of eco-innovativeness and supporting eco-innovativeness, especially for SMEs. The common value is development and synergy of partners' own competencies in the scope of designing and creating eco-innovations by investing in knowledge and skills, and also the possibility of creating cooperation networks.

In the autonomous portfolios of independently determined activities/directions of internal development of the partners of the Ecolabnet eco-innovative services network, the basic common direction can be unambiguously identified, which is development of competencies in the partner network, being a platform for transfer of knowledge, competencies, experiences, and also skills.

The conducted scientific discourse, introduced analyses and aggregated information on internal strategies and their implementation by partners of the network of eco-innovative services constitute cumulative knowledge concerning strategic objectives, tasks intended for economic entities that show a tendency to develop new eco-innovative initiatives, as well as a tendency of self-improvement and strengthening their value in networks of partners, in this case, in networks of eco-innovative services. This knowledge, its management and especially its transfer, acceleration in business areas can contribute to diffusion on the market: 1) reorganization, transformation towards eco-innovative changes of existing business entities, 2) creation of new eco-innovative start-ups. Thus, the research novelty is not only the set directions of strategic activities of the researched Ecolabnet partners, but the knowledge, which certainly through its transfer will facilitate the identification of barriers and at the same time development activities, identified by the entities of the researched consortium, which has been introduced in this article. It should be mentioned that in the context of knowledge transfer about, among others, the internal strategies of the partners of the eco-innovation services network the partners conducted: 3 trainings and 5 events in the form of workshops and online webinars of international scope, directed to the SME sector. The tangible result was an increased awareness pertaining to eco-innovations in the case of 337 participants from 10 countries (LT, FIN, EE, DK, SWE, PL, NL, SK, ES, US). In addition, the Digital Collaboration Tools (DCT) website - <https://dct-ecolabnet.pcz.pl> – has been designed and developed within Ecolabnet. More than 50 services and products have been introduced on the DCT website. Users of this service can intelligently search for links between partners, services and eco-innovation products. Number of users of the service: 247, total number of views: 3166 (accessed on 31 December 2021).

References

- Andreadou N., Guardiola M., and Fulli G., 2016. "Telecommunication technologies for smart grid projects with focus on smart metering applications", *Energies*, vol. 9, pp. 375.
- Bocken, N.M.P., Farracho, M., Bosworth, R. and Kemp, R., 2014. „The front-end of eco-innovation for eco-innovative small and medium sized companies”. *Journal of Engineering and Technology Management*, 31 (January-March), pp. 43-57.
- ECOLABNET, 2022. "Supporting eco-innovations". Network of Service Providers for Eco-innovations in Manufacturing SMEs – ECOLABNET, Interreg Baltic Sea Programme. [online] Available at: <<https://ECOLABNET.org/>> [Accessed 12 March 2022]
- European Commission, 2014. "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Green Action Plan for SMEs Enabling

- SMEs to Turn Environmental Challenges into Business Opportunities". [online] Available at: <https://ec.europa.eu/growth/smes/business-friendly-environment/green-action-plan_en> [Accessed 04 March 2022]
- European Commission, 2018. „Directorate-General for Internal Market, SMEs, resource efficiency and green markets”, Flash Eurobarometer 456, [online] Available at: <<http://ec.europa.eu/commfrontoffice/publicopinion>> [Accessed 04 March 2022]
- Karaarslan, S., 2015. „Eco-innovation competitiveness inland shipping”. Erasmus University Rotterdam.
- Kasaei M.J., Gandomkar M., and Nikoukar J., 2017. “Optimal management of renewable energy sources by virtual power plant” *Renewable Energy*, Volume 114, Part B, December, pp. 1180-1188.
- Koszarek-Cyra, A., 2016 „Pro-environmental actions of micro-enterprises in the European Union”. In *Development and improvement of organisation’s functioning. Enterprises in the era of new technologies, innovative and socially responsible actions*; Kulej-Dudek, E., Kobis, P., Eds.; Publishing House of Czestochowa University of Technology: Czestochowa, pp. 122–131.
- Kuceba R., Chmielarz G. and Nielsen T.M., 2020. „Eco-innovative barriers and needs of manufacturing SMEs from the BSR Region”. In: IBIMA, (International Business Information Management Association), 35th international conference on education excellence and innovation management: a 2025 vision to sustain economic development during global challenges. Seville, Spain, 1-2 April 2020.
- Kuceba R., 2021. „System for Transfer and Management of Knowledge on Eco-Innovative Services for SMES in the Network of Service Partners Ecolabnet: A Case Study”. *Proceedings of the 22nd European Conference on Knowledge Management* (ed.) GARCIA-PEREZ Alexeis, SIMKIN Lyndon, pp. 440-449.
- Kuen-Hung T., Yi-Chuan L., 2017. „Sustainability Strategy and Eco-Innovation: A Moderation Model”. *Journal Business Strategy and Environment*. Volume 26, Issue 4 May 2017, pp. 426-437.
- Marin G., Marzucchi, A. and Zoboli, R., 2015. „SMEs and barriers to eco-innovation in the EU: exploring different firm profiles”. *Journal Evolutionary Economics*, 25 (3), pp. 671-705.
- Muller, P., Julius, J., Herr, D., Koch, L., Peycheva, V. and McKiernan, S., 2017. “Annual report on European SMEs 2016/2017: Focus on self-employment”. European Commission. <<https://op.europa.eu/en/publication-detail/-/publication/0b7b64b6-ca80-11e7-8e69-01aa75ed71a1/language-en/format-PDF>> [Accessed 04 March 2022].
- Qarabsh A.N., Sabry S.S. and Qarabash H.A., 2020 „Smart grid in the context of industry 4.0: an overview of communications technologies and challenges”, *Indonesian Journal of Electrical Engineering and Computer Science* Vol. 18, No. 2, May 2020, pp. 656-665.
- Rysko A., 2016. „Proactive Environmental Strategy, Technological Eco-Innovation and Firm Performance—Case of Poland”. *Journal Sustainability*. MDPI. 2016, 8(2), 156.
- Triguero, A., Moreno-Mondéjar, L. and Davia, M. A., 2013. “Drivers of different types of eco-innovation in European SMEs”. *Ecological Economics*, 92, pp.25-33.