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**REINFORCING COMPARATIVE MONITORING OF SMART SPECIALISATION PERFORMANCE
ACROSS EUROPEAN REGIONS: TRANSNATIONAL RIS3 OBSERVATORY MODEL AS A TOOL
FOR SMART SPECIALISATION GOVERNANCE***

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Abstract. Smart Specialisation is dedicated to be a key driving force for entrepreneurial discovery and innovation in the European innovation policy paradigm in line with the European Strategy 2020 and the funding period 2014-2020. At the current stage, all EU NUTS-2 regions are monitoring their individually developed Regional Innovation Strategies on Smart Specialisation (RIS3) including monitoring systems that are needed to adjust upcoming future RIS3 strategies in the new funding periods. Despite the thematic topicality, the procedure of RIS3 evaluation and monitoring lacks a sound supra-regional approach when it comes to RIS3 implementation performance governance and institutional arrangements across all European regions. In fact, the blurring of RIS3 monitoring can be traced back to the policy nature that monitoring systems are set up, implemented and evaluated on individual regional and or national basis including a set of regionally tailored regional and national indicators. With regard to the policy challenges and research gaps of developing, and, later, using a joint macro-regional systemic institutional approach towards RIS3 implementation and monitoring, this paper provides a conceptual model for RIS3 performance, evaluation and monitoring governance based on case study analysis, best practices from RIS3 research and policy stakeholders' interviews. It is intended to serve as a comprehensive and comparative governance model on regional, national and

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European level, which fosters the institutional thickness and institutional multi-level horizontal cooperation among institutions involved in RIS3 performance and monitoring implementation. Within the empirical narrative, 10 NUTS-2 regions within the INTERREG Central Europe Programme area and in the frame of the “SMART_watch” project were subject to the analysis pertaining to their strategy design, priority axes and monitoring indicators. As a result, the so-called Transnational RIS3 Observatory Model was designed, which yields conceptual linkages to theoretical concepts using cluster theories as well as builds upon practical policy-driven approaches mushrooming in the innovation policy paradigm of the European Union. Furthermore, recommendations to foster the RIS3 policy implementation in the upcoming funding period are introduced in line with the setup of the observatory structure and its institutional embeddedness.

Keywords: Smart Specialisation, RIS3 Evaluation and Monitoring, RIS3 Observatory, Transnational Model, Regional Development, RIS3 Governance

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Additional disciplines: political sciences; information and communication

1. Introduction

The Smart Specialisation approach is one of the key pillars of the Europe 2020 Strategy in terms of economic development and growth policy thinking (McCann & Ortega-Argilés, 2011) as well as an approach to avoid dissipation of European Union (EU) funds among regions (Rusu, 2013). The basic idea can be traced back to the rising productivity gap between Europe and the USA in mid 90's, when European policy makers had to look for alternative policies to impede further economic decline. After announcing the Regional Innovation on Smart Specialisation (RIS3) initiative as a new novel policy on European level, all NUTS-2 regions were given an opportunity to develop individual strategies according to the available top-down policy agenda as well as design sufficient monitoring systems. With the ending of the funding period 2014-2020, RIS3 strategies will be monitored on achievements regarding successful RIS3 policy implementation. As a result, a bunch of recommendations to amend RIS3 shall be provided for the future EU funds' programming period and respective institutions and bodies involved in strategies' future design and implementation.

To continue sustainable development in Europe, the European Green Deal was announced as the new growth strategy for the EU towards a more sustainable economic and society (European Commission, 2019). This strategy aims at covering all key driving EU economic sectors by introducing new growth opportunities and activities. However, new strategic governance capacities are required for successful implementation (Larosse et. al., 2020). The Smart Specialisation approach follows the same idea to identify and use regional potentials to support innovative and competitive development. Therefore, Smart Specialisation policy can serve as a key pillar in the European governance transformation to reach the objectives of the European Green Deal until 2050. Thus, a specialisation by the regions using Key Enabling Technologies (KETs) or Knowledge Intensive Business Services (KIBs) to particular fields or priorities is unavoidable. The Baltic Sea Region serves as a flagship region among other EU macro-regions showing efficient and effective resource pooling and utilisation of capacities to reduce current challenges, e.g. in the maritime shipping and transportation area or innovation development in SMEs (Gerlitz, 2016). Currently, all European regions are revising their strategies for the next funding period starting in 2021 and pertaining to future regional innovative growth, including the elaboration to improve the RIS3 policy implementation (Gianelle et. al., 2020). Within this discourse, monitoring experiences frame a key focus and serve as an information pool for any potential future changes needed to be introduced by policy makers.

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Therefore, it is crucial moment right now to revise the monitoring systems of the regions in between the funding periods.

Due to the existence of individual region-based monitoring systems according to regional requirements, the results of current monitoring approaches lack any comparability. This bears a clear *problematic nature*. Moreover, some European Member States have introduced national strategies reinforcing regional ones or substituting them. As a result, the regional and national level considerations cannot be excluded from the current research discourse. Controversy, regional policy-making involved in innovation has a very limited impact on the Research and Innovation Strategies on Smart Specialisation (RIS3) programming (Marques and Morgan, 2018) due to risk-averse behaviour that restricts experimentation, flexibility and public initiatives as well as leads to being threatened due to the transparent bottom-up approach in the programme (Landabaso, 2014). Nevertheless, regional bodies play an important role for informal factors in institutions such as trust, responsibility, partnerships and regional leadership (McCann & Ortega-Argilés, 2014). In addition, innovation systems are proved to have the strongest impact on NUTS-2 levels (Ruhrmann et. al., 2020). Thus, a lack of successful and open-minded innovation policy governance impedes the set-up of Smart Specialisation strategies and their monitoring. Albeit, the European Smart Specialisation approach does not provide a framework on policy governance (Capello & Kroll, 2016). Hence, the need for an acceptance of the mutual action and reaction roadmap among institutions forging regional development and innovation is growing, including actual positioning, responsibilities' sharing as well as pinpointing cause and consequence relations, which at the current stage are unknown (Morgan, 2016). In this light, the practice-based model that is acknowledged among 10 NUTS-2 regions and is proposed by this research is seen as referred to as a contribution surpassing a simple necessity to meet this particular challenge.

The paper in hand displays the research done on evaluation and monitoring processes in line with RIS3 implementation by addressing the *research gap* of a missing comprehensive and comparative monitoring method and concept for RIS3 implementation across the whole European Union (EU). As a result, the present research contributes to the still missing theoretical and conceptual framework when it comes to Smart Specialisation (Andersons & Bushati, 2019). In the current funding period, the European Commission used a benchmarking based on structural similarities only (Navarro et. al., 2014), but did not focus on the actual implementation performance. Therefore, this research raises the following research question: *How can a functional model be implemented across the EU on all necessary levels (European, National [optional] and Regional) that enables Smart Specialisation monitoring for the regional innovation policy implementation?*

This paper is organised as follows. In the next chapter, the main theories used for this research will be presented. Key references to underline the theories as well as research gap are incorporated to this chapter. Next, the used research methodology including its scope and characteristics is provided. The fourth chapter includes the research results and the actual development of the Transnational RIS3 Observatory Model as tool of Smart Specialisation governance, ending with a concluding section summing up main insights and further research proposal.

2. Theoretical Background

The monitoring of RIS3 performance was not tackled in detail by previous literature. Mora et. al. (2019) identified current scientific trends in research on smart specialisation, but did not indicate any increasing numbers of scientific work on monitoring activities, despite the fact that monitoring became more relevant at the end of current funding period. Gianelle & Kleibring (2015) arrange monitoring activities in the overall implementation context for smart specialisation implementation. Further, Marti et. al. (2020) analysed the key next steps to

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support region's capacities in evaluation and monitoring of smart specialisation outputs. In addition, they highlighted the need to introduce better mechanisms to compare the processes and outcomes across regional borders. In this light, the present paper aims to fill this identified gap of missing monitoring approaches that integrate all relevant actors on regional, national and European level.

Further literature proposes solutions to foster or analyse the individual monitoring processes on regional or national level, such as Gulc, 2015; Angelidou et. al., 2017; D'Adda et. al., 2019; Cismas et al., 2019;; Jasinska, & Jasinski, 2019, Rane Santosh,& Thakker Shivangi, 2019). Kogut-Jaworska & Ociepa-Kicinska, 2020; Adeleke Abayomi et al., 2020).

Masana & Fernández (2019) introduce the term "learning" to the monitoring process and the European Commission indicates examples as best practices for regional monitoring (European Commission, 2020). However, all screened literature proposals lack performance measuring comparability with (all) other European regions in terms of RIS3. Acevedo (2019) presents dimensions to compare smart specialisation development of one specifically chosen region with others, but the approach is not transferable on a general level. Furthermore, innovation measurements like the EU 2020 Innovation indicator cannot be seen as a feasible instrument for RIS3 performance measurement due to the focus on innovation outcomes only (Janger et. al., 2017).

The present paper proposes a model filling the identified research gap with the transnational RIS3 Observatory Model approach by using clustering construct. Clusters are interconnected companies and institutions in a particular thematic field with a certain geographic concentration (Porter, 1998), but can also be elaborated as tools for regional development as a reduced scale innovation system (Gagnidze, 2015). The European Commission highly supports cluster strategies within the European growth strategy 2020 (European Commission, 2016a; Ketels & Protsiv, 2016; El Idrissi et al., 2020). Pavone et. al. (2020) recently published an analysis on clustering NUTS-2 regions according to their specialisation strategies.

In addition to cluster theories, innovation policy governance concepts are considered for the model development. Innovation policies in line with RIS3 are meant to be a multilevel approach, containing stakeholders' involvement according to the quadruple-helix approach that pools together various actors within the innovation system governance (Aranguren et. al., 2019). Mainly, the Entrepreneurial Discovery Processes (EDP) combines the interaction of all actors and their different levels under one innovation policy and transforms the strategy to reality in the regions (Grillitsch, 2016). Another key pillar is the RIS3-driven policy learning (Gianelle et. al., 2019), the ability to transform theoretical concepts to innovation policies and implement policy changes to support the regional (innovative and sustainable) development.

The presented model is based on both theoretical concepts – cluster theories and innovation policy governance – and pinpoints synergies from both concepts which can generate further add-value. In addition, enhancers of smart economic development such as networking, learning, innovation and knowledge facilitation are considered to be inherent in the model (Dagiliene et. al., 2019). Furthermore, the transnational RIS3 observatory Model fulfils the proposed requirement by the European Commission (2016b) that any Smart Specialisation Strategy programme demands a multi-scalar-co-ordination among supra-national, national and sub-national actors in Europe.

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3. Research Methodology

The present paper provides inductive perspectives, analysing chosen regions on their strategy design, implementation and monitoring to identify key insights to explain a phenomenon on the European level. Furthermore, with the analysed cases, this research paper deviates and constructs applicability and transferability options for all regions of the European Union.

Taking the proposed research gap into account, the argumentation of Creswell (2014) using qualitative approaches to explain and analyse a concept or phenomena can be followed. In the field of Smart Specialisation research, qualitative research approaches are preferred to explain political interventions on innovation governances (such as Björn & Johansson, 2017; Georghiou et. al., 2014; Komminos et. al., 2014; and Kroll et. al., 2016). The research strategies implemented can be classified according to the research onion of Saunders et. al. (2009) as the following:

- Case studies,
- Action Research, and
- Grounded theory.

The conducted research paper is using case studies of the “SMART_watch” project and participating regions representing European NUTS-2 regions. At a first glance, the regions were analysed individually using their published Regional Innovation Strategies on Smart Specialisation. Especially the chosen priority axes and monitoring systems with used indicators were scrutinised in the analysis, developing an overview on same priorities among the regions. In the next step, responsible bodies and their duties within the strategy implementation were considered, investigating for best practices to be adopted and transformed for other regions. Therefore, the case studies were highly funnelled into the main part of the implemented research, while action research and grounded approaches accounted for rather a lower share on the overall research process.

Action research was used after the first analysis of the strategy document of individual EU region to explore structural units within the model as a problem-solving approach. The stated issue on a missing comparability with existing monitoring systems can only be overcome with major organisational and governmental changes in line with the Smart Specialisation policy. The necessary information and insights have been gained in cooperation with practical actors (Huang, 2010) within the work done in the “SMART_watch” project and conducted short surveys and expert interviews. In contrast, grounded theory, according to Charmaz (2014), perceived as method to construct theories and recommendations from analysing qualitative data was incorporated to the research when developing conclusions and theories on improvements for Smart Specialisation monitoring systems based on the actual existing data within the regional strategies.

Based on this multi-method research methods, further literature reviews identified the mentioned research gap as well as actual regional needs and circumstances to implement a sufficient monitoring model, which ensures regional performance comparability of all European regions. Therefore, four research techniques can be summarised as basis of this paper:

- Research scope: 2018 – 2020, SMART watch applied research project
- Research methods: case studies, action research and grounded theory
- Research actions: desk research, empirical data analysis followed by comparative analysis, surveyed regions, expert interviews and relating document analysis
- Research approach: qualitative
- Research types: analytical, qualitative, exploratory, practice-based and conceptual.

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As a result, this paper is regarded to contribute to inductive research streams, and can be found within the philosophical perspective of constructivism and interpretivism of the researcher (ref. to Creswell, 2013).

In sum, in order to construct a practice-driven model that is intended to be used in the future, a mixed approach is at the heart of the research, where the researcher is obliged to compare, balance out and pick up the right approaches. Since this paper is a result of the applied research project, it heralds rather high applicability and transferability potential, which, indeed, can be underpinned through a systemic combination of methods, tools and approaches in the research methodology journey, as discussed above.

4. Designing the transnational RIS3 observatory model and positioning it within the current discourse

As introduced, cluster theories are used to build up the structure of the presented transnational RIS3 Observatory Model. Having the used definition of cluster by Porter (1998) and earlier mentioned recommendation to unify priority axis in mind, it is possible to align several clusters within a NUTS-2 region according to the individually chosen priority axis. As an example, the region of Mecklenburg Western-Pomerania has identified six priority axes in its RIS3 document for 2014 - 2020, so we would introduce six so called “RIS3 cluster” for it according to our model, which of course interact between each other as well on a sub-national level.

Based on the implemented qualitative analysis (case studies) in line with the “SMART_watch” project and 10 NUTS-2 regions analysed, several similarities of RIS3 implementation were indicated, e.g. in chosen priority axes, monitoring systems, observatory structures, etc. A comparison of the chosen regional priorities led to the conclusion that NUTS-2 regions have very similar axis and themes that partly only differ in their labels (e.g. “Health & Life Sciences” vs. “Life Sciences”). For the upcoming funding period, an early recommendation to be made is an unification of priority axis to create more common particular fields in the smart specialisation implementation. For the model development, this unification is one of the main requirements to create sufficient clusters between European NUTS-2 regions.

The structure of the conducted model is built around a main actor as managing body – the Transnational RIS3 observatory. It could be interpreted as managing position for a certain number of regional RIS3 clusters. This kind of cluster management structure was indicated as “cluster of clusters” by Keller (1996). Portnoy (2004) emphasises such structure as managing a cluster of classic. However, a thematic managing body on a transnational level to coordinate the regional RIS3 clusters.

The conducted model is considering any individual regional preferences in terms of Smart Specialisation. Therefore, every region is still developing an own strategy, integrating a detailed regional SWOT-analysis (or similar tools) to derive priorities like it is recommended by the European Commission (Foray et. al., 2012) and includes the involvement of regional stakeholders as vertical and horizontal network (Roman et. al., 2018).

In addition, as a result from the case study analysis, the model proposes to announce one representative / institution responsible for one specific priority axis. Some regions already follow this recommendation, but for a sufficient model implementation it is necessary to have such experts acting as contact and decision maker for each priority. The Trans-national RIS3 observatory body is the key element in conducted model structure and could be understood as a cluster organisation or platform. Such institutions shall be implemented to improve innovation and competitiveness of a specific cluster (Christensen et. al., 2012). From the authors’ point of view, a Transnational RIS3 observatory needs at least the mentioned three main bodies below:

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Management Committee:

Implementing a Management Board is a well recommended aspect for strategic leadership and competitiveness (Elenkov et. al., 2005) and already included in all analysed RIS3 documents as case studies. The Management Committee should consist of the representatives from each region under the observatory.

The main task for this committee is the administrative management of all actions in relation with the respective priority in their regions. In addition, the committee is responsible for coordinating the Smart Specialisation implementation activities in a cross-regional cooperative way. Furthermore, the on-gong implementation of the monitoring system is one of the key actions to be done by this committee. This includes to indicate future trends and obstacles for the respective thematic priority.

EU – cross communication body:

The second body is mainly responsible for the external communication of results, action plans, events, success stories etc. Through the individual implementation of regional strategies, European NUTS-2 regions tend to act like islands in terms of RIS3. To avoid such development, external (and internal) communication and networking activities are required. Therefore, a precise networking schedule with other trans-national observatories has to be developed and implemented by the communication body.

Furthermore, this body is the interlink to European level and responsible to exchange all necessary information, trends and results. Therefore, the cross-communication body should consist at least one representative from European level to ensure fast communication channels and communication managers from the regional level.

Thematic experts / stakeholder:

As mentioned earlier, the involvement of regional stakeholders is an important requirement to develop sophisticated strategies. This includes academics as well to foster regional development (Risár et. al., 2018). Though, the integration of thematic experts should be an on-going process in Smart Specialisation implementation. Therefore, the third body play a consulting role for the Managing Committee.

Another structural body to be included to the model is the management on national level. Analysing the case studies concludes only partly existence of national strategies. Therefore, this body is seen as optional and should focus on the support and coordination of all regions in the country.

For the model illustration in Figure 1, we assume a showcase having three regions from two different European countries (red and green frames). As mentioned, another assumption is a unification of priority axis which creates a defined set to choose from – illustrated by numbers. In this case, all three regions have chosen priority No. 11 as one of their smart specialisation axes as result on individual and regional analysis between several others. Thus, the regions are part of the cluster managed by the Transnational RIS3 observatory No. 11 with all mentioned characteristics and their representative for priority No. 11 will enter the Management Committee.

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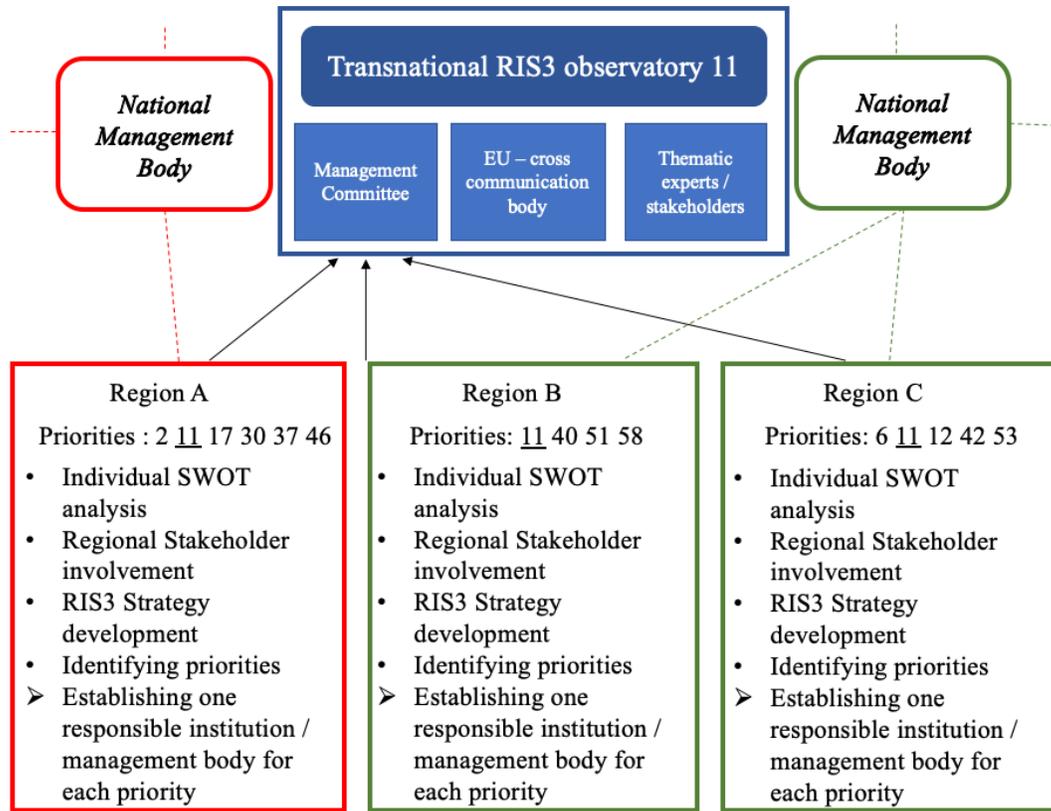


Figure 1: Transnational RIS3 Observatory Model including interlinks between structural bodies

Source: Compiled by the author

As shortly mentioned, the Transnational RIS3 observatories need to build up a network among each other via the communication body to connect all acting levels from regional to European. On European level, the responsible directorate need to be included to the overall Smart Specialisation implementation, namely European Commission, S3 platform and Joint Research Centre. Figure 2 illustrates possible connections between the actors, having three observatories as examples. This structure is necessary for regular information exchange as well as on-going monitoring on European level, including an evaluation of funding programmes and their results in terms of the RIS3 approach.

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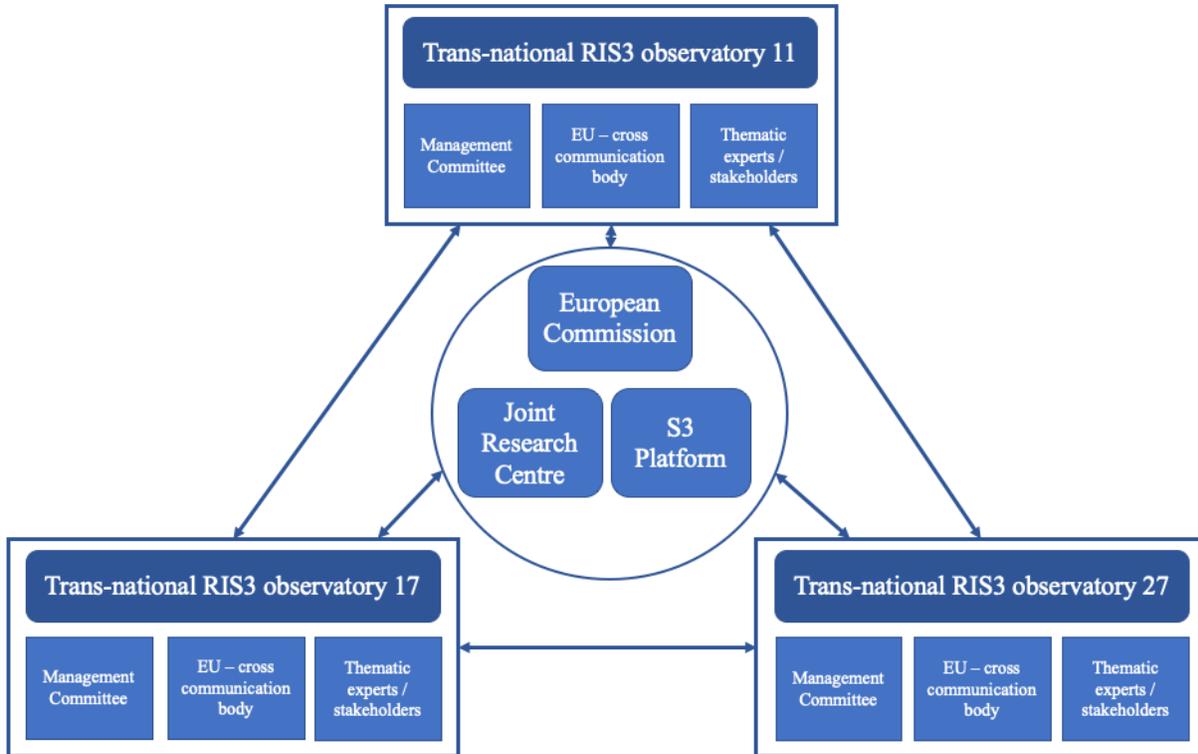


Figure 2: Classification and interlinks of Transnational RIS3 Observatories on European level

Source: Compiled by the author

To make sure a well-balanced number of regions within the observatories and avoid large-scale observatories, a geographical limitation could be implemented, also socio-economic characteristics could be reasonable allocation of the observatories (Pavone et. al., 2020). Another option is to implement classifications following the European funding areas, e.g. Central Europe or Baltic Sea Region. This ensures that the regions may have several similarities and their different circumstances are not too high obstacles for joint activities.

Monitoring System for the Trans-national RIS3 observatory

The proposed monitoring characteristics in the model is not part of the structure-oriented Figures 1 and 2. Following the earlier introduced approach to rely on cluster theories, the monitoring of a Trans-national RIS3 observatory itself should follow the Cluster policy cycle of the European Commission containing three stages: Analysis, Strategy and Action (European Commission, 2016a). This three-step approach is already implemented in several regional strategies and has been proven as sufficient process.

As key obstacle for a useful and sufficient monitoring system is the selection of indicators. In the case studies of the “SMART_watch” project, the author proposed a methodology to choose a set of indicators to measure Smart Specialisation performances of a limited number of NUTS-2 regions. In the presented model, the monitoring responsibilities are transferred completely to the Transnational RIS3 Observatory Model and its bodies. This allows a comprehensive comparison of the individual performances of the RIS3 implementation of each region under the observatories. As mentioned earlier, the national body is seen as optional unit so is the national

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monitoring system. If countries decide to set up individual national monitoring system as well, the requirement to have a comparable system across all European regions would fade away, which is one of the main problems to overcome in the model, therefore, individual (national) monitoring systems are not recommended.

Besides the recommendation and assumption to unify the priority axis to choose from, a more unified approach in choosing the right indicators for Smart Specialisation performance measuring is the second key recommendation in line with the Structural model. In the current implementation processes, each region chooses indicators by itself, which creates biased performance comparisons among regions. To avoid this bias, the selection of indicators should not be initiated on regional but on the European level in dialogue with the Transnational RIS3 observatories. In this sphere, indicators have to be distinguished with focus on Smart Specialisation performance measuring that serve as basis for all European regions monitoring – Set of Indicators for RIS3. This ensures high comparability among all regions and avoid biased individual monitoring activities. As the best practices have shown, at least context, output and result indicators have to be implemented in the set (European Commission, 2020).

As Figure 3 illustrates, the chosen set of indicators needs to be expanded by another category of indicators which are chosen specifically for the respective priority axis. As explained, the Transnational RIS3 observatories are set up in line with the thematic axis and though the observatories are in charge to select sufficient indicators to measure regional performances in the thematic fields – Priority specific indicators.

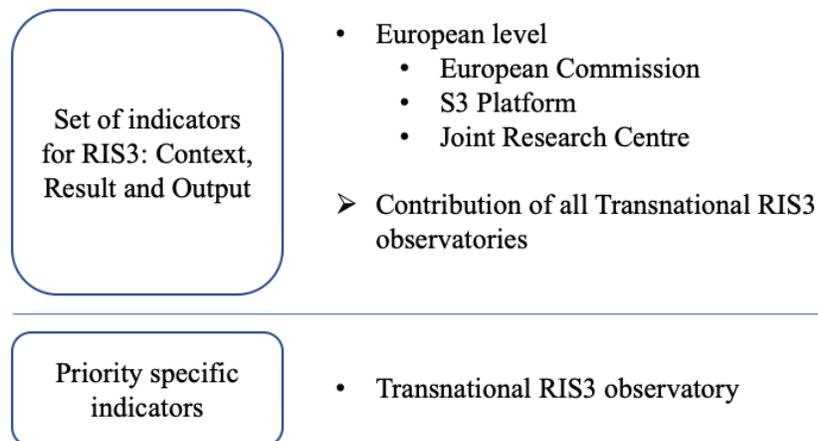


Figure 3: Monitoring indicators and responsibilities

Source: Compiled by the author

To finalise the set-up of proposed monitoring system in line with the Transnational RIS3 Observatory Model the regional capabilities need to be considered. At this point, the model considers the heterogeneity of European NUTS-2 regions. For each indicator of both categories, base values and target values have to be defined according to the region's economic, innovative and competitive circumstances and potentials. In line with this set-up, the data sources of indicator values have to be clarified to avoid any missing data in the on-going implementation and monitoring processes.

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5. Conclusions

The objective of this research paper was to examine, how a functional model can be implemented across the EU on all necessary levels to enable Smart Specialisation monitoring for RIS3 implementation. The conducted Transnational RIS3 Observatory Model as a tool introduces a sufficient structure that needs to be implemented and integrates main actors on regional, national and European level. Case study analyses were used building upon 10 European NUTS-2 regions' cases. In addition, the research delivers a macro-region and transferable concept of RIS3 policy governance that sets up the model structure as well as provides a portfolio of opportunities to foster collaboration across Europe on Smart Specialisation implementation, its evaluation and monitoring. The involvement of actors from the European level was introduced in line with the existing network participation in all Transnational RIS3 observatories interacting between each other and representatives of the European Commission, the Joint Research Centre and the S3 Platform as main contact points for Smart Specialisation.

Besides the structural description, the characteristics of the set of indicators as a key factor driving monitoring were described in detail including the responsible bodies for setting up and monitoring. At this point, the model pays tribute to the heterogeneity in terms of RIS3 monitoring discourse of European regions by providing room of action for individual optimisation. In addition, the model postulates the institutional responsibility for setting up regional target values for each indicator of the two categories: Set of Indicators for RIS3 and Priority specific indicators. As a result, this ensures a better evaluation of Smart Specialisation implementation success and a more efficient usage of regional capabilities.

The proposed model can be implemented initially in the current Smart Specialisation process supported by the online tool as proposed by Panori et. al. (2017). Required bodies and institutions are mainly established already across the regions. Therefore, a change to the proposed model can be pushed fast and with low costs. It requires only resources regarding capacity reallocation and perspective change. Though, as next step, a feasibility study of the model with several NUTS-2 regions participating is recommended to test the structure and monitoring system to foster the regional RIS3 implementation performances.

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