sciendo
DOI: 10.2478/rsc-2020-0012

A META-ANALYSIS AND EXPLANATION OF INNOVATION PROCESSES THROUGH THE OUTLINE OF SOCIAL FIELDS THEORY

Victor Cepoi
Faculty of Information Studies in Novo mesto, Slovenia
E-mail: victor.cepoi@fis.unm.si

Abstract: *Modern reports and studies on innovation processes offer a variety of possibilities for measuring and explaining innovation processes. These reports have a comparable model for operationalization of the concept of innovation, as they include both quantitative and qualitative indicators. The complexity of the modern societies and the interaction of actors, determines also to look for alternative models, which would embrace this complexity. We do not question these approaches and their reliability toward measuring the innovation performance, but rather to focus on alternative operationalization and explanation. Thus, through the embedment of the Social Fields Theory in the context of innovation processes it would offer various possibilities of applying a more coherent operationalization toward the explaining innovation. This article will display a critical assessment of a number of studies and projects, which used this approach in order to explain the innovation, but also using different methodologies that incorporate innovation processes and the theory of Social Fields.*

Key words: Innovation, Social Fields Theory, social forces, QCA, HPC

1. Introduction

Innovations have been the crucial element of developmental performances through all the human history. It is therefore not surprising that it is an important aspect of European grand strategies such as Europe 2020 and its predecessor Lisbon strategy (Rončević 2019; Makarovič at al. 2014). The role of a wheel or a paper or an electric bulb seems to be quite illustrative in that regard. However, according to the accelerated complexity of the social world, innovations have become not merely a breaking point in the development of human society, but a crucial component of social actions entailing successful adaptation to social contexts. The contemporary social order reflects the increasing complexity of social systems, and has thus given rise to the

emergence of new social areas. Functional differentiation has raised the role of the autonomous social subsystems, and multiplied the social environments where social actions take place. New unpredictable and uncertain social areas have appeared that affected the character of social organisation (Beck, Giddens and Lash 1994). Due to the changing and more fluid structural settings, the relationship between actors and social environments indicates various techniques of adaptation and adjustments of the social context, which enable actors controlling new unpredictable social areas and risks of a contemporary era. Innovations can be seen as processes triggered from such actions.

Scholars focusing on innovations research have contributed to extensive understanding of the factors that contribute to the development of the systems of innovation, as well as their mechanisms (Carlsson, Jacobsson, Holmen and Rickne 2002; Etzkowitz and Leydesdorff 2000; Isaksen 2001; Edquist 2001). Moreover, this process can take on a number of dimensions within the society, including economic, social or cultural. In this paper, the consideration of determinants of innovations is in the forefront. The focus is on factors that influence particular social environments to become a trigger for innovations to emerge and contribute to an existence of the innovative society. In order to deepen understanding of the determinants on innovation process, the integrated theory of strategic social fields (Fligstein and McAdam 2012) is taken into account, as it allows approaching the interplay between actors and social environments as social arenas or local orders.

With the constant technological progress, economic approaches are no longer able to explain all the changes that are happening. As a result, a broader view has to be taken into account for innovation processes, which are considered to be the promoters of economic development around the world. Most of the studies that deal with innovations are either case studies (community or regional level) or do not always consider all the aspects that trigger innovation.

When it comes to markets, these are both politically and socially constructed. In this regard, these social constructions reflect a country's culture and its history of class relations, but also the governments' interventions (Fligstein 2001). Nevertheless, the capitalist national system can be understood as a whole. Being more specific, it is about modes of capital allocations, labor relations, tax systems, and state involvement and ownership in key industries. Simultaneously, at regional levels, these also have to be at forefront. Therefore, not only the social constructions of the culture, capital allocations, labor relations, or tax systems on the national level influence the markets, but also the ones at regional levels.

Following this line of argument, one of the theories that consider the determinants of innovation processes on different levels, is the theory of strategic social fields (Fligstein and McAdam 2012). This framework allows us to approach the interaction between actors and social environments as social arenas or local orders. States present a complex system of fields, which share all the characteristics of the non-state field. Social fields are seen as the local orders, where "interactions between more and less powerful collective groups according to rules and shared meanings take place" (Fligstein 1997, 11). National environments frame a variety of strategic action fields, which are embedded in terms of Russian nesting dolls (Fligstein in McAdam 2012, 9). It has been argued that any given field is embedded "in a broader environment consisting of countless proximate or distant fields, as well as states, which are themselves organized as intricate system of strategic action fields" (Fligstein and McAdam 2012, 3).

The presence of rules and shared meanings define the interaction between more or less powerful collective groups (Fligstein 2001). The incorporation determines social rules of the local order, either individuals or collective agents as a unit of analysis. To center on specific regions, we focus on social fields because each region can be regarded as a specific order. In addition, focusing on social fields as an analytical outline, allows incorporating specific social forces. Each social field is formed with the help of the interplay between institutions, networks, and cognitive frames, which constitute the three social forces. New economic realities require new approaches toward development. As in any other social fields, also in national ones, three social forces influence the interplay between social setting and actions: institutional rules, cognitive frames, and network topography (Beckert 2010). In that regard, all such structures are seen as irreducible. Institutions influence structure of social networks and make certain cultural meanings socially relevant. At the same time, social networks establish power to shape institutions, and cognitive frames provide the legitimation of certain institutions. Cognitive frames also shape perceptions of network structure that reversely shape and diffuse cognitive frames (Beckert 2010, 612). All three social forces influence the stratification of fields within a national context and thus position actors who are accordingly embedded in different powerful positions. Conversely, actors draw on resources from their position, and through structural coupling they have the ability to influence institutions and networks.

The aim of this paper is to consider other studies that link innovation processes with the theoretical framework of Social Fields Theory and to have a more comprehensive understanding the way innovation and social forces

can be conceptualized. Thus, it will lead to a better predictability and improvement of society's economic and social traits.

2. Conceptualization

The need for operationalization of the individual elements of innovation systems has been on the agenda for more than a decade (Balzat and Hanusch 2004). The variety of explanations of Innovation Systems on different levels is a necessary stage in embedding the topic in a framework, which would allow having a comparable model for operationalization of the concept of innovation. In present there are a number of reports (World Competitiveness Yearbook; Global Competitiveness Report, Innovation Union Scoreboard, Regional Innovation Scoreboard, etc.) that deal with innovation on different levels. These reports not only measure the level of innovation performance on different spatial scales, but also tend to different approaches toward the operationalization of innovation. A special emphasize has to be made in terms of the methodological approaches these reports use. For instance, WCY uses different types of data that measure qualitative and quantifiable issues. GCR uses statistical data from international agencies, but also some surveys to capture a qualitative assessment, especially for the statistical data that are not available. As we can see, these reports capture both quantitative and qualitative concepts that measure the competitiveness relying on a wide range of indicators. We do not question these approaches, and their reliability toward measuring the innovation performance. Through the embedment of the Social Field Theory in the context of Innovation Systems, it would offer various possibilities of applying a more coherent operationalization toward the explanation of innovation as an outcome. Additionally, it would solve the difficulty of focusing on larger number of indicators that sometimes are hard to access.

Following this line argument, in the following paragraphs we would like to display a number of studies, which used this approach in order to explain the innovation from different levels of analysis, but also using different methodologies that incorporate the theory of Social Field Theory, and Innovation System. Among the pioneers in explaining RIS as Social Fields, were Rončević and Dolores (2012). In their paper, the authors focused on seven regions in order to show the necessary and sufficient conditions for innovation. The authors used data from various reports (OECD, World Values Survey, EPO/WIPO, Regional Innovation Scoreboard, Academic Ranking of World Universities database, and other) in order to measure the regional innovation innovativeness. Their approach toward the analysis of the data

was with the help of QCA. The popularity of the Qualitative Comparative Analysis is gaining the popularity among scholars from different domains. This method was developed by Charles Ragin (1987; 2000; 2008), which allows to test the necessary, and sufficient of the present or absent conditions for any particular outcome. The authors were able to combine the theoretical framework, and verify it empirically the influence of the social forces on RIS, by showing that these conditions are necessary, and sufficient for innovation (Rončević and Modic 2011, 326). Additionally, as the authors point, when these social forces are considered separately, these do not have enough explanatory power to explain innovation.

The authors focused on several indicators in order to measure Innovation and the three Social Forces:

- Innovations – number of patents; high-tech items in export; general innovation performance.
- Institutions – supportive government regulation for new firms or/ and IPR/ spin-offs; support services; density of technology parks, and technology transfer entities; regional entity (-ies) for innovation support; and top universities.
- Networks – trust/social capital; university-industry cooperation; intraregional collaboration of firms; cooperation with customers.
- Cognitive frames – firm based innovation system; presence of science-based industry; skilled work force; knowledge absorption capacity.

In their paper Cepoi and Rončević (2015), focused not on explaining innovation processes, but also on explaining development performance with the help of the three social forces. The authors collected the data for 29 countries from various databases as Global Competitiveness Report, World Competitiveness Yearbook and Innovation Union Scoreboard.

- Innovation – Country capacity of innovation, nature of competitive advantage, production process sophistication and the total % of SMEs introducing product innovations.
- Institutions – Intellectual property protection, quality of math and science education, country to retain talent, country to attract talent, quality of scientific research institutions, availability of scientists and engineers and R&D expenditure in the business sector as % of GDP.
- Social Networks – University-industry collaboration in R&D, innovative SMEs collaborating with others as % of SMEs, international scientific co-publications per million population and state of cluster development.

- Cognitive Frames – Firm-level technology absorption, the openness of national culture to foreign culture, flexibility and adaptability toward new challenges, and country's value system in supporting competitiveness.

This data was used for the analysis with the help of Structural Equation Modelling and Fuzzy-Set Analysis to test the relationship between the proposed indicators (Cepoi and Rončević 2015, 44). The results show that for the outcome (innovation), all three social forces (institutions, networks and cognitive frames) are considered as necessary conditions, meanwhile institutions having the strongest effect. Additionally, in their subset/superset analysis, the authors also highlighted that all three social forces are also sufficient conditions for innovation to take place. Even more, what it is important to stress, is that this analysis showed various combinations of these social forces. For example, the strongest effect on innovation is from the presence of institutions and social networks or cognitive frames and social networks. Meanwhile, even if the analysis of the data with the help of Structural Equation Modelling has mostly backed the results, there was an exception. The results pointed that there is an absence of an effect from cognitive frames, meanwhile institutions and social networks are at forefront (Cepoi and Rončević 2015, 43).

Another article that focused on the explaining Innovations relying on Social Forces and QCA is from Rončević and Cepoi (2016). The study relies on a sample of 29 European countries. The paper proposes a model that explains the outcomes of innovation processes. Additionally, it tests the robustness of the theoretical model with the application of multivariate statistical analysis, structural equation modelling and especially fuzzy-set analysis. Thus, the authors rely on:

- Innovations – PCT Patents, applications/million pop., country capacity of innovation, nature of competitive advantage, production process sophistication, total % of SMEs introducing product innovations.
- Institutions – Intellectual property protection, quality of math and science education, country capacity to retain talent, country capacity to attract talent, quality of scientific research institutions, availability of scientists and engineers, R&D expenditure in the business sector as % of GDP.
- Social Networks – University-industry collaboration in R&D, innovative SMEs collaborating with others as % of SMEs, international scientific co-publications per million population, State of cluster development.

- Cognitive Frames – Firm-level technology absorption, the openness of national culture to foreign culture, flexibility and adaptability toward new challenges, country's value system in supporting competitiveness.

In their analysis, the authors highlighted the differences between Western and Eastern European countries. Thus, in the West, the social forces are shaping the social fields of innovations. Meanwhile, in the East, it is the absence of social forces that is relevant; the social fields of innovations cannot even develop. Nevertheless, their conclusion was that the proposed model is explaining endogenous innovation; innovation can still occur through FDI; typical for semi-peripheral and peripheral development. It also might offer possible inputs for innovation policies in the two regions.

Another study (Cepoi and Golob 2017) embedded the framework of strategic action fields in explaining innovations systems on the level of the EU 28. The authors used statistical data from Global Competitiveness Report, Innovation Union Scoreboard, and World Competitiveness Yearbook. By clustering the countries in various ways, the results emphasized that in the case of countries that have less developed innovation level, the three social forces not constitute sufficient conditions. Additionally, the social forces are necessary conditions, regardless of the innovation level. Nevertheless, identical tendency is seen when the countries were grouped not geographically, but statistically. Therefore, the authors came to the conclusion that there are no differences in the way the countries are grouped (Cepoi and Golob 2017, 574). Relying on the theoretical background, in all case studies the authors selected the indicators from various reports that (in)directly influence innovation systems on the national, and regional levels. As the comparison of the two operationalization approaches point, we can observe that all approaches relied on the operationalization of innovations, and the three social forces.

- Innovation – country capacity for innovation; nature of competitive advantage; production process sophistication; the total % of small-medium enterprises introducing product innovations; number of applications filed under the patent cooperation treaty per million population.
- Institutions – intellectual property protection; country capacity to retain talent; country capacity to attract talent; availability of scientists and engineers; R&D expenditure in the business sector as % of GDP; quality of math and science education; quality of scientific research institutions.
- Networks – university-industry collaboration in R&D; international

scientific co-publications per million population; innovative SMEs collaborating with others as % of SMEs; state of cluster development.
- Cognitive frames – the openness of national culture to foreign culture; the country's value system in supporting competitiveness; the firm-level technology absorption; flexibility and adaptability toward new challenges.

The results at the national level show that innovation processes should not be understood only as a one-dimensional process from an economic perspective, but rather also to consider the social aspect. As the authors point, social forces can facilitate or hinder the development processes, including innovations.

Modic and Rončević (2018) focus on the analysis of the individual social forces influences on regional innovation performance. The authors selected fifteen diverse regions from four continents, thus showing that for a region to be successful, the outcome is determined by the combined influence of institutions, social networks and cognitive frames. As a result, for each of the indicator, the authors looked at:

- Innovation – Number of patents, high-tech items in export, general innovation performance.
- Institutions – Supportive government regulation for new firms or/and IPR/ spin-offs, support services, density of Technology parks and technology transfer entities, regional entity (-ies) for innovation support, top universities.
- Networks – Trust, universities-industry cooperation, intraregional collaboration of firms, interregional collaboration of firms, cooperation with customers.
- Cognitive frames – Firm based innovation system, presence of science-based industry, skilled work force, knowledge absorption capacity, business R&D expenditures.

The results of the study show that institutions, social networks and cognitive frames have a nuanced impact on shaping the regional innovation systems. Nevertheless, as the authors point, even the social forces impact the level of regional innovation level there is no universal model of adaption.

The common ground for these articles is the quantitative approach toward measuring innovation and social forces. As a result, these approaches implied the collection of available secondary data from different databases. At the same time, the differences arise within the indicators that measure innovation and the social forces.

Cepoi (2019) focused on the three social forces (networks, institutions, and cognitive frames) as an alternative explanation for innovation processes. Thus, it encompasses the aspects of different social fields on the regional level.

The approach was similar to Cepoi (2018) (will be discussed in details in the following chapters), but with QCA as the main method of analysis. The focus was on both individual and combined influence of the social forces. The author considered seven regions in the analysis. The results show that social forces are absent in three regions: Kragujevac (Serbia), Balti (Moldova) and Trieste (Italy). Meanwhile, in Carlisle (UK) and Cluj (Romania) there are present only networks, in Novo mesto (Slovenia) there are cognitive frames and networks and in Waterford (Ireland) we have the presence of all social forces.

3. Innovation and Social Fields. A qualitative approach

As it was highlighted in the previous chapters, until now we observed a pattern of quantitative approach studies toward explanation of innovation processes through the framework of Social Fields theory, based on the original conceptual exploratory work of Rončević and Modic (Rončević and Modic 2011; Rončević and Modic 2012; Modic and Rončević, 2018). In the PhD dissertation (Cepoi 2018), there is an attempt to incorporate also the qualitative approach. Thus, the study researches innovation processes through the framework of Social Fields, namely the three social forces (networks, institutions, and cognitive frames) at the regional level with the help of both qualitative and quantitative methods. On the one hand, the developed framework constituted based on a semi-structures interview guide, which allows not only see the strengths and weaknesses, but also to collect scores for each of the indicator. In comparison to the previous studies, this qualitative approach, allows stakeholders to acknowledge which aspects of the innovation process have to be considered (Cepoi 2018, 39). On the other hand, these scores are used for the Qualitative Comparative Analysis. The data was collected in seven regions with different levels of innovation performance. Thus, the author operationalized each of the variables in a set of four questions:

Innovations

- Please assess the level of innovation within your region?
- What are the strengths and weaknesses concerning collecting, processing and disseminating innovation information (such as funding opportunities, potential partners, available know how, technologies, etc.) in the region?
- What are the regional strengths and weaknesses concerning enterprises and R&D?
- Is the final product oriented toward regional level?

Institutions

- What are the strengths and weaknesses concerning the role of the public authorities and/or intermediary organizations representing these authorities?
- Does your region have the capacity to attract talented people?
- Does your region have the capacity to retain talented people?
- What are the strengths and weaknesses regional innovation-policy?

Networks

- How networks are organized (e.g. multi-sectoral, enterprises only or sector only) and to which extent do the networks contribute effectively to innovation performance?
- What are the strengths and weaknesses concerning cooperation between stakeholders within the region?
- What are the strengths and weaknesses concerning cooperation between regional stakeholders and parties outside the region?
- Do stakeholders trust each other?

Cognitive frames

- What are the strengths and weaknesses of the culture and attitude of the population concerning creativity, and entrepreneurship?
- To what extent do the regional attitudes / culture enable the learning processes in the region?
- Is competition seen as a positive or negative value for innovation processes?
- What is the role of Globalization for the innovation processes?

Nevertheless, the author focused on two types of analysis. Firstly, at forefront was the in-depth qualitative analysis of data gathered through the help of focus groups (Cepoi 2018, 38). Secondly, the collected data allowed also to perform a Fuzzy-Set Analysis. The results of the combination of both methods offered explanation for regional stakeholders, which go beyond simple economics (Cepoi 2018, 134). Even more, the interview guide allowed to explore in more depth the level of the innovation and social forces. Consequently, the results show that networks and cognitive frames are both necessary conditions for innovation, additionally, networks can be considered also sufficient to have innovation in a given region. Nevertheless, when institutions and networks are both considered, these are necessary conditions. These conclusions were backed also by the qualitative analysis of the focus groups.

The application of Social Fields Theory in the framework of innovation development, goes beyond the studies mentioned earlier. The model of

embedding the framework of the Social Fields into explaining different processes also applies to the context of project implementation. Therefore, as it was mentioned earlier, at this stage we will present some cases where within the research scholars use the qualitative methodology for collecting the data. For instance, one of such approach is the "High-Performance Computing for Effective Innovation in the Danube Region"[1]. The aim is to create transnational HPC laboratory for co-designing knowledge-intensive innovative products with high value-added in transnational value-chains for companies from the electronic, and automotive industries. Within the framework of the project, before providing the guidelines for the Digital Transformation of Industry in the countries of the Danube region, the project relies on the data collection of the regional needs, and competencies. The template for the structured interviews, and focus group was formulated around the framework of the three social forces, and the level of HPC development. Each of the four profiles (High Performance Computing and Innovation, Institutions, Networks, and Cognitive Frames) is measured through four question that represent different indicators. An additional aspect of the tool, is that on one had it also emphasizes the strengths, and weaknesses of each indicator. On the other hand, it allows to collect data and perform Qualitative Comparative Analysis, therefore focus on the necessary and sufficient conditions of the HPC and Innovation profile. The data was collected within the countries of the Danube, thus constituting an important asset for the region.

HPC and Innovation

- Please assess the level of application of HPC in industrial R&D in your country?
- What are the strengths and weaknesses concerning collecting, processing and disseminating High Performance Computing information (such as applicability, funding opportunities, potential partners, available know-how, technologies, etc.) in the country?
- What are the strengths and weaknesses concerning applications of advanced ICT tools for R&D in enterprises from automotive and electronics industries?
- Is the existing HPC application oriented towards industrial R&D?

Institutions

[1] High-Performance Computing for Effective Innovation in the Danube Region is a project in the framework of the Interreg Danube Transnational Programme, the Faculty of Information Studies (Slovenia) is the leading partner, http://www.interreg-danube.eu/approved-projects/innohpc.

- What are the strengths and weaknesses concerning the role of the public authorities and/or intermediary organizations (e.g. technology transfer offices) for HPC?
- Does your country have the capacity to attract talented people, including – but not exclusively – those with HPC competencies?
- Does your country have the capacity to retain talented people, including those – but not exclusively – with HPC competencies?
- What are the strengths and weaknesses regional/national innovation-policy? (Also, take into account conduciveness for HPC applications.)

Networks

- How are networks organized (e.g. multi-sectoral, enterprises only or sector only, regional, cross-border etc.) and to which extent could these networks contribute effectively to the implementation of HPC in industrial R&D?
- What are the strengths and weaknesses concerning cooperation between stakeholders active in innovation and technological policy?
- What are the strengths and weaknesses concerning cooperation between stakeholders active in innovation and technological policy and actors outside your country?
- Do stakeholders/entrepreneurs active in innovation and technological policy trust each other?

Cognitive Frames

- What are the strengths and weaknesses of the culture and attitude of the population concerning creativity, entrepreneurship and new technologies? (Take into account its conduciveness for implementation of HPC in industrial R&D.)
- To what extent do the attitudes and culture enable the learning processes in the country?
- Is competition seen as a positive value in your country?
- What is the role of globalization with respect to adoption of new technologies in your country?

The in-depth analysis showed, as in the case of the previous researches, the presence of an interconnected influence of the social forces on HPC and innovation in the three pilot regions from Ireland, Slovenia and Romania. The obtained knowledge can be used as context-specific policy guidelines for the improvement of the HPC and innovation landscape.

Additionally, we can speak about Social Fields in the framework of the Technology and Innovations in Regional Development for Europe 2020[2], which has the aim to focus on successful, smart and inclusive growth, in which technology and innovations on the regional level are at the forefront. Following this line of argument, one of the aim was to have more than 20 focus groups at regional level with stakeholders from academia, business, and state institutions.

Innovation

- Please assess the level of innovation within your region?
- Please assess the situation regarding collecting, processing and disseminating of information (such as funding opportunities, potential partners, available know-how, technologies, innovations etc.) in the region?
- Please assess the involvement of enterprises in R&D?
- Does the region rely on Open Innovation Practices, which is emphasising use of freely and openly available ideas and knowledge in their own R&D?

Institutions

- Please assess the level of impact of the public authorities and/or publicly founded intermediary organizations (such as regional development agencies, innovation agencies, incubators, technology parks) in supporting R&D and innovations in the region? (R&D or Innovations?)
- Does your region have the capacity to attract talented people?
- Does your region have the capacity to retain talented people?
- Please assess the innovation-policy?

Networks

- How do the networks between businesses, institutions of knowledge, public bodies, professional associations, trade unions, NGOs etc. contribute to innovation performance in the region?
- Please assess the level of cooperation between stakeholders within the region?
- Please assess the level of cooperation between regional stakeholders and actors outside the region?
- Do stakeholders trust each other?

Cognitive Frames

[2] Technology and Innovations in Regional Development for Europe 2020 (TIR2020) is a project in the framework of the Jean Monnet Centre of Excellence at the Faculty of Information Studies, Slovenia, https://www.tir2020.net/.

- Please assess the level of the culture and attitude of the population concerning creativity and entrepreneurship?
- To what extent do the regional attitudes/culture enable learning processes in the region?
- Is competition seen positively or negatively by most people?
- How is globalization perceived in the context of the innovation processes?

TCV embeddedness

- How embedded are Transnational Value Chain relationships (TVC) or other forms of transnational relationships (TR) in the region?
- Assess the role of Transnational Value Chain (TVC) relationships or other forms of Transnational Relationships (TR) for the R&D and innovative processes in the region?
- To which extent does the regional economic performance depend on Transnational Value Chain (TVC) relationships or other forms of Transnational Relationships (TR)?
- What is the role of the regional actors (enterprises, industrial sectors and clusters) in the Transnational Value Chains?

The interview guide was constructed on the Social Fields framework, having the same principle of the InnoHPC project, allowing to underline the strengths, and weaknesses of the indicators, and to collect the information that will be used for the Fuzzy-Set Analysis. Nevertheless, if in the case of the InnoHPC project the focus was in determining conditions, which contribute to the development HPC and Innovation, while within this project the aim was to focus exclusively on innovation and technology transfer.

4. Conclusion

As shown in these examples, even if the approach is rather novel there were made several attempts from different authors who opted toward an approach that embeds the theory of Social Fields around the concept of the Innovation Systems. It not only triggers economic changes, but also rather this approach allows stakeholders to search and to assess for theoretical and policy solutions for boosting the competitivity and development. Even more, from a scientific approach, the cases emphasized that rather similar operationalization can be adapted for both regional and national levels. The results presented at the regional level (Rončević and Modic 2012; Modic and Rončević 2018; Cepoi 2018; Cepoi 2019) are in accordance with the results

obtained in other studies at the national level (Cepoi and Rončević 2015; Rončević and Cepoi 2016; Cepoi and Golob 2017). At least, these results show the importance of incorporation of different social aspects that determine the evolution and development of innovation processes within a particular milieu. Therefore, it is important to see that the same logic is applied in the context of national innovation systems as in the case of regional innovation systems. The obtained results do not contradict each other, but rather emphasize the robustness of the model. It is important to point those even current tendencies to focus on decentralization; regions are regarded as independent social-political frameworks, though the role of national innovation system remains important. Nonetheless, the model considers the particularities of the specific social fields (either national or regional) and supports the sufficient and necessary factors in the complex context specifics. Overall, we consider that the results present valuable assets for policy-makers, both at regional and national levels, who consider in planning innovation systems.

Even more, it is important to highlight the flexibility of using the Social Fields Theory in data collection and different types of analysis. Therefore, the proposed approach points toward the flexibility of the data collection, which is either of statistical or qualitative nature. It allows cross-fertilizing not only the social factors with and economic phenomenon, but from a methodological stand point – the qualitative and quantitative empirical evidence. Although the model has proved to be robust from the perspective of the obtained results, there is still a need of improvements from the theoretical and explanatory assessments.

References

Beckert, Jens. 2010. "How Do Fields Change? The Interrelations of Institutions, Networks, and Cognition in the Dynamics of Markets." *Organization Studies* 31 (5): 605–627.

Carlsson, Bo, Jacobsson, Staffan, Holmen, Magnus, Rickne, Annika. 2002. *Innovation systems: Analytical and Methodological Issues. Research Policy* 31 (2): 233–245.

Cepoi, Victor, Golob, Tea. 2017. "Innovation performance in the EU comparative perspective: the interplay of social forces in the context of national innovation systems." *Comparative sociology* 16 (4): 555–579, doi: 10.1163/15691330-12341433.

Cepoi, Victor, Golob, Tea. 2016. "Regional innovation performance: measuring development in cultural, social and economic perspectives." *Innovative issues and approaches in social sciences* 9 (1): 242– 260.

Cepoi, Victor, Rončević, Borut. 2015. "Social fields theory explaining innovations and developmental performance: an empirical test." In: STROUHAL, Jiri (ed.). *Economics, law and political science: proceedings of the 4th International Conference on Economics, Political and Law Science (EPLS '15), Rome, Italy, November 7–9, 2015*, 4th International Conference on Economics, Political and Law Science (EPLS '15), Rome, Italy, November 7–9, WSEAS. 2015, pp. 38–47.

Cepoi, Victor. 2016. "Do social forces matter? A model for innovation and development performance." *Research in Social Change* 8 (3): 4–27. doi: 10.1163/15691330-12341452.

Cepoi, Victor. 2019. "Interplay of social forces: a focus on regional innovation processes." *The social sciences* 14 (12): 423–430. https://medwelljournals.com/abstract/?doi=sscience.2019.423.430. Accessed 5. 9. 2020.

Cepoi, Victor*. Social networks as factors for innovations. Doctoral dissertation*. Ljubljana, 2018.

Edquist, Charles. 2001. "Systems of Innovation for Development (SID). Written for Investment Promotion and Institutional Capacity-building Division, Industrial Policies and Research Branch." United Nations Industrial Development Organization (UNIDO).

Edquist, Charles. 2004. Systems of Innovation: Perspectives and Challenges, in J. Fagerberg, D. Mowery and R. Nelsoneds (Eds.), *The Oxford Handbook of Innovation*. Oxford Press Foster, Hilden, and Adler.

Etzkowitz, Henry, and Leydesdorff, Loet. 2000. The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university-industry-government relations. *Research Policy* 29: 109–123.

Fligstein, Neil and McAdam, Doug. 2012. *A Theory of Fields*. Oxford: Oxford University Press.

Fligstein, Neil. 2001b. "Social skill and the theory of fields." *Sociological Theory* 19: 105–125

Isaksen, Arne. 2001. "Building Regional Innovation Systems: Is Endogenous Industrial Development Possible in the Global Economy." *Canadian Journal of Regional Science*, XXIV (1): 101–120.

Makarovič, Matej, Janez Šušteršič, Borut Rončević. 2014. "Is Europe 2020 set to fail? The Cultural Political Economy of the EU Grand Strategies." *European Planning Studies* 22 (3): 610–626.

Modic, Dolores and Rončević, Borut. 2018. "Social topography for sustainable innovation policy: putting institutions, social networks and cognitive frames in their place." *Comparative sociology* 17 (1): 100–127, doi: 10.1163/15691330-12341452.

Rončević, Borut. 2019. "Cultural Political Economy of Europe 2020: Jean Monnet Chair CPE 2020 and its Impact." *Research in Social Change* 11(2): 5–13.

Rončević, Borut, Cepoi, Victor. 2016. "Social embeddedness of innovation: East and West compared." Paper presented at mid-term conference of European Sociological Association's Research Network 36 '*Sociology of Transformations: East and West*', Sibiu, September 28–29.

Rončević, Borut, Modic, Dolores. 2011. "Regional systems of innovations as social fields." *Sociologija i prostor: časopis za istraživanje prostornog i sociokulturnog razvoja* 49 (191): 313–333.

Rončević, Borut, Modic, Dolores. 2012. "Social fields of technological innovations." In: Nikolai Genov (ed): Global trends and regional development. New York: Routledge, pp. 226–247.

Technology and Innovations in Regional Development for Europe 2020 (TIR2020), Jean Monnet Centre of Excellence at the Faculty of Information Studies, Slovenia, https://www.tir2020.net/.