**NETWORK ANALYSIS FOR INNOVATION ECOSYSTEM OF SAMSUN**

**Okan Gumus**

**ABSTRACT**

This research is about to explain the features of Samsun innovation ecosystem network through social network analysis. The purpose is to draft Samsun Innovation Ecosystem Network Map and its representation with network mapping. The main question is what are the features of Samsun innovation ecosystem network and/or how is the Samsun innovation ecosystem network explained? This research is the first, but not last, academic study which combines theoretical and practical perspectives on innovation ecosystem network analysis in provincial level in Turkey. Having reviewed the previous studies and theoretical background from the researchers such as Freeman C. and Luc S., Curley M.G., Moore C.F., Gomes L.A., Dedehayir O., Burt R.S. and Barabasi A.L. for the concept of Innovation Network and Ecosystem Analysis. As a methodology, specified geographical coverage as Samsun, population of reference as 20 among 66 regional actors, selected snowball technique as a data collection method because of the limited time and global pandemic. This research was prepared under the limitations of geographical coverage of Samsun, tool of Gephi for network analysis and exclusion of private sector companies from the sample group. The findings of this study are that 1. Samsun ecosystem has within the scope of co-event for R&D and innovation, with 288 links. The item that follows the co-event is the cooperation protocol, which is the intention to work together, for R&D and innovation, as of 2020, a total of 167 links for cooperation-based protocols, 97 links for project partnerships, 75 links for services, 21 links for providing financial support and 13 links for clustering in the ecosystem, 2. In the ecosystem, there are a total of 75 links regarding services provided by institutions for R&D and innovation. There are, as a service provider in the ecosystem, 15 institutions for project consultancy services, 9 institutions for commercialisation services, 6 institutions for incubation services, 5 institutions for incorporation services, 6 institutions for IPR services, 13 institutions for entrepreneurship services, 8 institutions for internationalisation services, 5 institutions for funding services, 8 institutions for education & training services. There is not any service provider for venture capital services, 3. Ondokuz Mayis University ranks first with 170 relationships. OKA ranks second with 132 relations, OMU TTO ranks third with 97 relations, SAMU and SAMU TTO rank fourth with 73 relations, STSO ranks fifth with 65 relations and SAMSUN TEKNOPARK ranks sixth with 60 relations. As there are 41 institutions have lower than 10 links, SASBAS and Bafra TDI Organised Industrial Zone are seen isolated from the ecosystem as not having any relation, 4.OMU has become the first in the relationship concentration by connecting with 32 co-events, 6 regional or international supported projects, 79 cooperation protocols and 1 financial support and 1 clustering in the ecosystem. For the result-oriented performance, there is a need for a stronger university-industry cooperation model on a city scale so, this cooperation will both support the university and contribute to the holistic development of the province in the medium and long term.

**Keywords:** Innovation, Innovation Ecosystem, Social Network Analysis, Network Mapping, Samsun

**REFERENCES**

Adner, R. (2006) "*Match Your Innovation Strategy to Your Innovation Ecosystem*", Harvard Business Review, 84(4): 98–107.

Aydoğan, M, Demiryürek, K. (2018). The comparison of social networks between organic and conventional hazelnut producers in Samsun province. Anadolu Tarım Bilimleri Dergisi, 33, 216-225.

Barabasi, A.L. (2010). Bağlantılar. İstanbul: Optimist Yayınları.

Barton, A. (1968). Bringing society back In: Survey research and macro-methodology. American Behavioral Scientist, 12, 1–9.

BEBKA (2020a). Bursa Inovasyon Ekosistemi Analizi. Retrieved June 6, 2020, from <https://www.bebka.org.tr/admin/datas/sayfas/89/2020-bebka-bursa-inovasyon-3_1601991053.pdf>.

BEBKA (2020b). Bilecik Inovasyon Ekosistemi Analizi. Retrieved June 6, 2020, from https://www.bebka.org.tr/admin/datas/yayins/234/bilecik-inovasyon-2020-final\_1598007815.pdf.

BEBKA (2020c). Eskişehir Inovasyon Ekosistemi Analizi. Retrieved June 6, 2020, from <http://bebka.org.tr/admin/datas/yayins/232/eskisehir-inovasyon-ekosistemi-2020_1596099034.pdf>.

Castells, M. (2008). Ağ toplumunun yükselişi, enformasyon çağı: Ekonomi, toplum ve kültür. İstanbul: İstanbul Bilgi Üniversitesi.

Chiristakis, N.A. & Fowler, J.H. (2012). Sosyal ağların şaşırtıcı gücü ve yaşantımızı biçimlendiren etkisi. İstanbul: Varlık Yayınları.

Cooke P. (2008). Proximities, knowledges and innovation biographies, EURODITE Project Papers.

Curley M.G., and Formica, P. (2013), The Experimental Nature of New Venture Creation; Capitalizing an Open Innovation 2.0. Newyork, NY; Springer.

Dedehayir, O., Mäkinen, S. J. and Roland Ortt, J. (2016) ‘*Roles during innovation ecosystem genesis: A literature review’*, Technological Forecasting and Social Change. Elsevier Inc., pp. 1–12. doi: 10.1016/j.techfore.2016.11.028.

Demiryurek, K., Erdem, H., Ceyhan, V., Atasever, S. & Uysal, O. (2008). "*Agricultural information systems and communication networks: the case of dairy farmers in Samsun province of Turkey"*. Information Research, 13(2).

European Union (2015) Growing A Digital Social Innovation Ecosystem For Europe: DSI Final Report. doi: 10.2759/448169.

European Union (2016) Regional innovation ecosystems CoR guide: learning from the EU’s cities and regions. Available at: https://publications.europa.eu/en/publicationdetail/-/publication/6a43bcbb-85a9-43fc-afa3-db58c42f4730/language-en.

European Union (2017) Place-Based Innovation Ecosystems: Espoo Innovation Garden and Aalto University (Finland). doi: 10.2760/31587.

Freeman, C. and Luc, S. (1997) The economics of industrial innovation. Psychology Press.

Freeman, L.C. (2004). The development of social network analysis: A study in the sociology of science. Vancouver: ΣP Empirical Press.

Gomes, L. A. de V. et al. (2015) ‘*Unpacking the innovation ecosystem construct: Evolution, gaps and trends’*, Technological Forecasting and Social Change. Elsevier Inc. doi: 10.1016/j.techfore.2016.11.009.

Gomes, L. A., Facin, A. L., Salerno, M. S., & Ikenami, R. K. (2016) "*Unpacking The Innovation Ecosystem Construct: Evolution, Gaps and Trends"*, Technological Forecasting & Social Change.

iUrban Publishing. (2014). Innovative City Strategies for Delivering Sustainable Competitiveness. Summary report.

İZKA (2016). İzmirYenilik Göstergeleri ve Yenilikçilik Ekosisteminin Analizi. Retrieved June 6, 2020, from https://www.kalkinmakutuphanesi.gov.tr/dokuman/izmir-yenilik-gostergeleri-ve-yenilik-ekosistem-analizi/600.

Marsden, P.V. (2005). Recent developments in network measurement models and methods in social network analysis. In P.J. Carrington, J. Scott & S. Wasserman. Models and methods in social network analysis (pp. 8‒30). New York: Cambridge University Pres.

Mersin TSO (2008). Mersin Inovasyon Stratejisi 2006-2016. Retrieved June 14, 2020, from  [http://oda.mtso.org.tr/files/mersin\_inovasyon\_stratejisi.pdf](https://www.kosgeb.gov.tr/Content/Upload/Dosya/Mali%20Tablolar/KSEP/Kobi_Stratejisi_ve_Eylem_Plani_(2015-2018).pdf).

Moore, J. F. (1993). Predators and prey: a new ecology of competition. Harvard Business Review, 71(3), 75–86. doi:Article.

Nelson, R. R. (1992) ‘*National innovation systems: A retrospective on a study’*, Industrial and Corporate Change. doi: 10.1093/icc/1.2.347.

OKA (2017a). TR83 Middle Black Sea Regional Innovation Strategy. Retrieved June 6, 2020, from https://www.oka.org.tr/assets/upload/dosyalar/bolgesel-inovasyon-stratejisi-ingilizce-13-63.pdf.

OKA (2017b). Innovation Management Strategy. Retrieved June 6, 2020, from <https://www.oka.org.tr/assets/upload/dosyalar/bolgesel-inovasyon-stratejisi-ingilizce-13-63.pdf>.

Öztaş, N. & Acar, M. (2004). Ağbağ analizine giriş: Kavramlar ve yöntemler. İçinde M. Acar ve H. Özgür. (Eds.), Çağdaş kamu yönetimi II. (s.s. 288‒316). Ankara: Nobel Yayınevi.

URAK (2019). İllerarası Rekabetçilik Endeksi 2018. Retrieved June 6, 2020, from <http://www.urak.org/wp-content/uploads/2019/05/URAK_%C4%B0RE_2018-2.pdf>.

Valkokari, K. (2015) ‘*Business, Innovation , and Knowledge Ecosystems: How They Differ and How to Survive and Thrive within Them’*, Technology Innovation Management Review, 5(8), pp. 17–24.

Wellman, B. (1988). Structural analysis: From method and metaphor to theory and substance. In B.Wellman and S.D. Berkowitz (eds), Social structures: A network approach, (pp. 19–61).Cambridge: Cambridge University Press.