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## INNOVATION DEVELOPMENT AS A DRIVER OF COUNTRY'S COMPETITIVENESS: THE IMPACT ASSESSMENT

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One of the UN Sustainable Development Goals is to promote sustainable economic growth and policies focused on entrepreneurship and innovation (The United Nations). Thus, inclusive, and sustainable industrialization together with innovation and infrastructure have the potential to increase the dynamic and competitive economic forces that create employment and income. However, if the least developed countries are to achieve the UN Sustainable Development Goals by 2030, they must not only increase production levels, which declined even before the COVID-19 pandemic, but modernize sustainable critical infrastructure and increase investment in research and innovation.

In this context some approaches cover financing under conditions of sustainable development based on the principles of public-private partnership (Karpenko & Shyshova, 2015), substantiation of innovation development strategy and its aims (Zakharkina & Zakharkin, 2014). Ecological and economic effect of investments take place too (Pokhylko, 2012). Moreover, opportunities and threats to ensure sustainable development relate to financial decentralization of territorial communities (Tiutiunyk & Reshetnyak, 2017). In our opinion, the barrier is the deep deficit of competitiveness of some countries. We agree that globalization and the fourth industrial revolution created new opportunities, but also caused disruption and polarization within countries and between the economies of the world. The results of the Global Competitiveness Index in 2019 show that most economies continue to remain far from the 'border' of competitiveness (Schwab, 2019). So, we hypothesize that the indicator of innovation capacity has a significant impact on the total assessment of competitiveness, and we will check its validity in this research.

Simonceska (2012) emphasizes the strength of change and innovation in relation to the country's competitiveness by considering important ways to overcome resistance to innovation. Sacio-Szymańska (2013) analyzes factors influencing the creation of innovations and economic competitiveness of countries, including the level and structure of R&D expenditures, key national R&D priorities supported by major government programs, level of general entrepreneurial activity, etc. Doğan (2016) examines the impact of some factors that characterize innovation on the competitiveness of the EU countries. The author substantiates that knowledge and technology, and creative result have a positive effect on competitiveness. However, the impact of the level of country's innovation development on the total assessment of its competitiveness is covered in fragments and needs to be formalized and empirically confirmed.

The sample of data from 24 European countries for 2019 (which are simultaneously presented in all these rankings) was formed by blocks of influential international competitiveness ratings to investigate the impact of the level of country's innovation development on the total assessment of its competitiveness:

- ‘Innovation Capability’ (IC) (The Global Competitiveness Index – GCI), which contains indicators of interaction and diversity (diversity of the workforce, the state of development of clusters, international joint inventions, cooperation between stakeholders), R&D (evaluation of scientific publications, patent applications, R&D costs, popularity of research institutions) and commercialization (segments of buyers and applicants of trademarks);

- ‘Scientific Infrastructure’ (SI) (IMD World Competitiveness Ranking – WCR), which includes indicators of the structure of R&D expenditures, qualification of scientists and researchers, publishing activity, patents and grants, Nobel Prizes, average - and high-tech added value, intellectual property rights, knowledge transfer;

- Innovation Sub-index (ISI) of the EU Regional Competitiveness Index (ERCI), which combines indicators of technological readiness (the level of technology use), business complexity (productivity and enterprise potential, response to competitive pressure, inflow of foreign direct investment) and innovation in products and processes (Table 1).

**Table 1.**

**Innovation development as a driver of country's competitiveness**

Country	GCI		WCR		ERCI	
	Total ranking	Place by 'IC'	Total ranking	Place by 'SI'	Total index	ISI
Austria	21	14	19	13	77	66
Belgium	22	17	27	18	76	72
Croatia	63	73	60	55	32	32
Czech Republic	32	29	33	26	60	52
Denmark	10	11	8	10	83	74
Finland	11	12	15	16	73	72
France	15	9	31	12	67	62
Germany	7	1	17	5	80	70
Greece	59	47	58	41	24	30
Hungary	47	41	47	35	40	34
Ireland	24	21	7	22	68	70
Italy	30	22	44	21	42	42
Latvia	41	54	40	57	39	38
Lithuania	39	42	29	44	45	36
Luxembourg	18	19	12	27	94	97

Continued Table 1

Netherlands	4	10	6	15	87	77
Poland	37	39	38	31	43	29
Portugal	34	31	39	32	43	42
Romania	51	55	49	42	18	11
Slovakia	42	44	53	50	44	35
Slovenia	35	28	37	30	61	55
Spain	23	25	36	24	44	46
Sweden	8	5	9	9	81	73
United Kingdom	9	8	23	11	82	84

*Source: developed by the author based on Schwab, 2019; Annoni & Dijkstra, 2019; International Institute for Management Development, 2019.*

Then we determined the type of functional relationship between the innovation development of the country and the level of its competitiveness using correlation and regression analysis due to the STATA software package (Table 2).

**Table 2.**  
**The results of assessing the impact of country's innovation development on the level of its competitiveness.**

Result indicator	Factor indicator	r	Function	R <sup>2</sup>	Prob > F	P >  t	[95% Conf. Interval]
Total ranking GCI	Place by 'IC'	0,9493	GCI = 0,86 IC + 4,87	0,9012	0.00	0.00	.736112 .9885717
Total ranking WCR	Place by 'SI'	0,7559	WCR = 0,83 SI + 8,5	0,5714	0.00	0.00	.5126981 1.148953
Total index ERCI	ISI	0,9693	ERCI = 0,98 ISI + 5,56	0,9396	0.00	0.00	.8685429 1.087842

*Note: Prob > F – the level of significance of F-statistics (< 0.05); P > |t| – the level of significance of t-criterion (< 0.05); r – correlation coefficient; R<sup>2</sup> – coefficient of determination.*

*Source: developed by the author*

That is why hypothesis of the significant impact of country's innovation development on its competitiveness is confirmed by the obtained values of correlation coefficients, which characterize significant, strong ( $r > 0,7$ ) and very strong ( $r > 0,9$ ), direct, and positive relationship between the investigated indicators, coefficients of determination ( $R^2 > 0,9$ ;  $R^2 > 0,5$ ), and the levels of significance of F-statistics and t-criterion (for all ratings the value is 0,00, not exceeding the

allowable 0,5). It confirms the statistical significance of the coefficients in the established functional dependencies, the adequacy of constructed linear regression models and the quality of the results of the correlation and regression analysis.

Thus, the impact of innovation development on country's competitiveness is statistically significant, direct (positive), very strong (according to GCI and ERCI ratings) or strong (according to WCR rating). With an increase in the value of innovation capability indicator by 1 %, the Global Competitiveness Index will increase by an average of 0,86 %, scientific infrastructure indicator – the value of IMD World Competitiveness Ranking will increase by an average of 0,83 %, innovation sub-index – the EU Regional Competitiveness Index will increase by an average of 0,98 % (probability of the hypothesis erroneous acceptance is 0 %).

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