

Misled by Data? Review of Data Sources in National Intellectual Capital Research
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Appendix 1. Full listing of the reviewed literature with detailed classification

- (1) Article type: A=general, B=country comparison, C=country analysis, D=special aspect (**row variable**)
- (2) Main focus/ research question
- (3) Database where the article is stored: Emerald Journals=m, Ebsco=e, Scopus=s, ScienceDirect=c
- (4) Year of publication
- (5) Data sources used in the article:
 - (a) The World Bank: World Bank (WB), World bank group (WBG), WB:n World development indicators (WDI), World Bank database (WB DB), Knowledge economy Index (WBG KEI), World Bank's Knowledge Assessment Method database (WB KAMD)
 - (b) The World Economic Forum: World Economic Forum (WEF), Global Competitiveness Report/WEF (GCR), Global competitiveness index (GCI), Network Readiness Index (NRI)
 - (c) The United Nations: United Nations (UN), UN development Programme (UNDP), Human development index (HDI), Human development Report (UNHDR), UN Public Administration Country Studies (UN/PA), Millennium Development Goals (UN MDG), United Nations Educational, Scientific and Cultural Organization (UNESCO), World Health Organization (WHO), ILO survey data, International Labour Organisation (ILO)
 - (d) International Institute for Management Development: International Institute for Management Development databases (IMD), IMD Competitiveness Report (IMDCR), World Competitiveness Yearbook (WCY)
 - (e) Official statistics, supranationals: OECD, Eurostat
 - (f) National Statistical offices: National statistical institutes (NSI), Statistics Finland (SF), State information service (SIS/Arab), World Trade Analyzer (WTA, Statistics Canada)
 - (g) European Commission and other European bodies: European Commission (EC), European Innovation scoreboard Ranking (EISR), EU's AMECO database, European Patent Office (EPO), Innovation Trend Chart data (ITCD), European Union EU structural index (EU SI)
 - (h) Other banks and financial institutions: Asian Development bank (ADB), European Central bank (ECB), National bank (NB), Genuine Saving Index (GSI WB), International Monetary Fund (IMF)
 - (i) New data sources: Citation index (CI), Google, Yandex
 - (j) Interview
 - (k) Other index sources: Corruption Perceptions Index (CPI), Transparency International (TI), Information Society Index (ISI IDC), Environmental Performance Index (EPI), Environmental sustainability Index (ESI, Yale University and Columbia University, WEF and Joint Research Centre of the European Commission), Sustainability Society Index (Sustainable Society Foundation by van de Kerk and Manuel), Global innovation Index (Cornell University, INSEAD, World Intellectual Property Organization in partnership with other organizations and institutions), Business Competitiveness Index (BCI, Michael Porter), Democracy index (EIUDI, The Economist Intelligence Unit), Global Peace Index (GPI, Institute for Economics and Peace and Economist Intelligence Unit), Index of Personal and Economic Freedom (IPEF, Sorens ad Ruger), Country's project Maturity index (CPMI, unknown), Index of individual innovations (III; unknown), Public Sector Transparency Index (PSTI, unknown)
 - (l) Others: Welfare ind (national); EQ, IQ indicators; EIS; private research institutions; Ministry; Intellia (Finland); SABI (Bureau van Dijk, Spain); National Science Indicators on Diskette, ISI Co (USA); The global Information Technology Report (WEF, INSEAD); Global Footprint Network (think tank network of over 70 partner organizations); Ecological Footprint of Consumption (Worldmapper); Sustainability Assessment by Fuzzy Evaluation (SAFE); World Factbook/CIA, statistics; pENV=Proportional composite environmental, Hofstede *et al.* (2010), World Values Survey (global network of social scientists); Taiwan economic statistical database/Taiwan Economic Data center; US Patent Office; private sources, WCR=World competitiveness Report
- (6) Geographical coverage: 1=one country or two countries, 2= 3-9 countries, 3=10-19 countries, 4=20-49 countries, 5=50-99 countries, 6=100- countries
- (7) Number of citations (Google Scholar, 28.2.2019)
- (8) Relation to public sector data:
0=no mentions of data, 1=base of measurement and/or statistics mentioned, 2= some attention to data
- (9) Presence of public sector data providers: 0=no mentions, 1=visible role, 2=minor role/recognized
- (10) Country of the university of the main writer of the article

Authors, articles and (1.) article type	2. Main focus/ research question	3.	4.	5.	6.	7.	8.	9.	10.
General articles (A):									
Hervas-Oliver, J., Rojas, R., Martins, B. and Cervelló-Royo, R., 2011, The overlapping of national IC and innovation systems, <i>Journal of Intellectual Capital</i> , 12(1), pp. 111-131.	The aim of providing a more robust theoretical framework to explore the drivers of intangibles and the policies which foster competitiveness through the development of the NIC platforms	e m	2011	d	3	31	1	1	Spain
Jednak, S., Dmitrović, V. and Damjanović, V., 2017, Intellectual capital as a driver of economic development, <i>Economic Review: Journal of Economics & Business</i> , 15(2), pp. 77-84.	To present the concept of IC as a driver of economic development	e	2017	b, c, f	6	0	1	2	Serbia
Kamaruddin, K. and Abeysekera, I., 2013, Intellectual Capital and Public Sector Performance, <i>Studies in Managerial and Financial Accounting</i> , 27 (abstract)	To investigate the management of IC in the Malaysian public sector	m	2013	j	1	15	0	0	Malaysia
Käpylä, J., Kujansivu, P. and Lönnqvist, A., 2012, National intellectual capital performance: A strategic approach, <i>Journal of Intellectual Capital</i> , 13(4), pp. 343-362.	To tackle the problem of societal knowledge management from the perspective of critical management research, focus on NIC analysis	e m s	2012	d, e, f, h	4	21	1	2	Finland
Labra, R. and Sánchez, M.P., 2013, National intellectual capital assessment models: A literature review, <i>Journal of Intellectual Capital</i> , 14(4), pp. 582-607.	Literature review of NIC, to identify and compare the main models of IC at the country level and to examine IC approach for firms	e m s	2013	a, b, c, d	4	51	0	0	Chile
López, R.V., Navarro, J.L.A. and Nevado, D. P., 2016, Economic growth and intangible capitals: An international panel data model applied in the 21st century, <i>Romanian Journal of Economic Forecasting</i> , 19(2), pp. 102-113.	To measure and value IC and its component in order to complement GDP	s	2016	a, b, c	3	3	1	2	Spain
Macerinskiene, I. and Aleknaviciute, R., 2015, Comparative evaluation of national intellectual capital measurement models, <i>Business: Theory & Practice</i> , 16(1), pp. 1-14.	To analyze NIC concept and measurement models and to show how NIC could be measured	e s	2015	a, h	3	16	2	0	Lithuania
Marcin, K., 2013, Intellectual capital as a key factor of socio-economic development of regions and countries, <i>Procedia Economics and Finance</i> , 6, pp. 288-295.	To present the concept of IC from regional perspective, a sample model of IC for countries and main sub-component is presented as well	c	2013	a	1	22	1	1	Poland
Sharma, R., Fantin, A., Prabhu, N., Guan, C. and Dattakumar, A., 2016, Digital literacy and knowledge societies: A grounded theory investigation of sustainable development, <i>Telecommun Policy</i> , 40(7), pp. 628-643.	A study of ICT policies, applications and the resulting transformations in five mature economies	c	2016	a, b, c, f, k	2	20	2	2	Singapore

Authors, articles and (1.) article type	2. Main focus/ research question	3.	4.	5.	6.	7.	8.	9.	10.
Ståhle, P. and Pöyhönen, A., 2005, Intellectual capital and national competitiveness: A critical examination. Case Finland, in <i>6th European Conference on Knowledge Management proceedings in University of Limerick, Ireland, 2005</i> , pp. 575-583.	Critical examination of meaning of competitiveness reports and national IC research and importance to concentrate on knowledge creation and innovation in NIC	s	2005	b, c, d, g	1	22	1	1	Finland
Country comparisons (B):									
Alfaro, J., López, V. and Nevado, D., 2011, The relationships between economic growth and intellectual capital: A study in the European union, <i>Acta Oeconomica</i> , 61(3), pp. 293-312.	Measurement of a value of country's IC	s	2011	a, b, c	4	10	1	2	Spain
Bontis, N., 2004, National Intellectual Capital Index: A United Nations initiative for the Arab region, <i>Journal of Intellectual Capital</i> , 5(1), pp.13-39.	Development of national capital measurement methodology and index	m s	2004	a, c, e, f	4	781	2	1	Canada
Chew, A., Sharma, RS. and Bontis, N., 2014, Intellectual wealth of nations revisited: Operationalising the value cycle of innovation, <i>Knowledge & Process Management</i> , 21(1), pp. 1-12.	To investigate the relationship between innovation and its tangible contributions to NIC	e s	2014	a, b	4	6	1	2	Singapore
Edvinsson L. and Bounfour, A., 2004, Assessing national and regional value creation, <i>Measuring Business Excellence</i> , 8(1) pp. 55-61.	To explain how can we better understand the dynamics of intangibles on a national scale	e m s	2004	g, l	3	45	0	0	Sweden
Herciu, M. and Ogorean, C., 2015, Wealth, competitiveness, and intellectual capital – sources for economic development, <i>Procedia Economics and Finance</i> , 27, pp. 556-566.	Identify strong interrelations between national wealth, national competitiveness and IC according to Pearson, R and R2 results	c	2015	b	4	20	0	0	Romania
Hervas-Oliver, J. and Dalmau-Porta, J.I., 2007, Which IC components explain national IC stocks?, <i>Journal of Intellectual Capital</i> , 8(3), pp. 444-469.	To provide a consistent theoretical framework to measure NIC and also empirical evidence on the core factors which explain countries' IC stocks	e m s	2007	e	5	50	1	0	Spain
Inkinen, H., Kianto, A., Vanhala, M. and Ritala, P., 2017, Structure of intellectual capital - an international comparison, <i>Accounting, Auditing & Accountability Journal</i> , 30(5), pp. 1160-1183.	To suggest that country-specific institutional structures may impact the perception of IC and weather differences exist between five countries	e m s	2017	j, l	2	15	2	2	Finland
Lin, C.Y.Y. and Edvinsson, L., 2008, National intellectual capital: comparison of the Nordic countries, <i>Journal of Intellectual Capital</i> , 9(4), pp. 525-545.	To propose a model to measure NIC	m s	2008	d, e	4	145	1	1	Taiwan

Authors, articles and (1.) article type	2. Main focus/ research question	3.	4.	5.	6.	7.	8.	9.	10.
Lin, C.Y.Y. and Lin, T.Y., 2008, National intellectual capital: Exploring Taiwan's standing , <i>International Journal of Learning and Intellectual Capital</i> , 5(3-4), pp. 311-331.	To process a set of NIC indices (NICI) to rank the countries, Taiwan standing	s	2008	a, c, d, e, l	4	14	1	1	Taiwan
Lin, C.Y.Y. and Edvinsson, L., 2012, National intellectual capital model and measurement, <i>International Journal of Knowledge-Based Development</i> , 3(1), pp. 58-82.	Reporting a validated NIC measurement model.	s	2012	d	4	21	1	1	Taiwan
Lin, C.Y.Y., 2018, Intellectual capital of South Africa: A comparison with Poland and Romania, <i>Journal of Intellectual Capital</i> , 19(3), pp. 498-518.	To uncover the NIC of South Africa by making comparisons with Poland and Romania	e m s	2018	b, d	2	1	1	2	Taiwan
Liu, Y., 2007, Facing the challenge of rising China: Singapore's responses, <i>Journal of Policy Modeling</i> , 29(3), pp. 505-522.	To examine the trade and investment relationship between Singapore and China and to review the Singapore policies	c	2007	f, h	1	18	1	1	Singapore
López, R.V., Navarro, J.L.A. and Nevado, D. P. (2011a), Economic development and intellectual capital: An international study, <i>Revista de Economía Mundial</i> , 29, pp. 211-236.	To study relationships between economic development and the national level of IC	e	2011	a, b, c	5	17	1	1	Spain
López, R.V., Navarro, J.L.A. and Nevado, D. P. (2011b), Relationship between gross domestic product (GDP) and hidden wealth over the period 2000-2008: An international study, <i>Electronic Journal of Knowledge Management</i> , 9(3), pp. 259-270.	To measure the development and management of knowledge in a country by using IC non visible assets indicators	e	2011	a, b, c	5	5	1	1	Spain
López, V.R., Nevado, D.P., Navarro, J.L.A., Badea, L., Grigorescu, A. and Voinea, L. (2011c), Measurement of national nonvisible wealth through intellectual capital, <i>Romanian Journal of Economic Forecasting</i> , 14(3), pp. 200-212.	New model to measure NIC as implicit generator of long-term wealth, adapted from microeconomics	s	2011	a, b, c	5	17	1	1	Spain
Lu, W., Kweh, Q.L. and Huang, C., 2014, Intellectual capital and national innovation systems performance, <i>Knowledge-Based Systems</i> , 71, pp. 201-210.	To evaluate the R&D efficiency and economic efficiency of the national innovation system by network data envelopment analysis production process	c	2014	d, f	4	41	2	2	Taiwan
Navarro, J.L.A., López, V.R. and Nevada, D.N., 2011. Estimation of intellectual capital in the European Union using a knowledge model, <i>Zbornik Radova Ekonomskog Fakultet Au Rijeci</i> , 29(1), pp. 109-132.	To present a model measuring IC as the potential knowledge of a country and apply it to the EU	s	2011	e	4	28	1	1	Spain
Navarro, J.L.A., López, V.R.L. and Nevada, D.N., 2014, Economic growth and intangible capitals: Europe versus Asia, <i>Panoeconomicus</i> , 61(3), pp. 261-274.	To determine the intangible elements that have a greater impact on long-term economic development	s	2014	a, b, c	5	12	1	1	Spain

Authors, articles and (1.) article type	2. Main focus/ research question	3.	4.	5.	6.	7.	8.	9.	10.
Önsel, Ş., Ülengin, F., Ulusoy, G., Aktaş, E., Kabak, Ö. and Topcu, Y., 2008, A new perspective on the competitiveness of nations, <i>Socio-Economic Planning Sciences</i> , 42(4), pp. 221-246.	The classification of countries is determined using artificial neural networks	c	2008	b	6	129	1	2	Turkey
Phusavat, K., Comepa, N., Sitko-Lutek A. and Ooi K., 2012, Intellectual capital: National implications for industrial competitiveness, <i>Industrial Management & Data Systems</i> , 112(6), pp. 866-890.	To focus on examining the interrelationships between IC and economic development in Thailand and Southeast Asia	e m	2012	a, b	2	24	1	2	Thailand
Seleim, A. and Bontis, N., 2013, National intellectual capital and economic performance: Empirical evidence from developing countries, <i>Knowledge & Process Management</i> , 20(3), pp. 131-140.	To examine the relationship between NIC and economic performance in less development countries	es	2013	a, c	6	48	1	1	Egypt
Stachowicz-Stanusch, A., 2013, The relationship between national intellectual capital and corruption: A cross-national study, <i>Journal of Business Economics & Management</i> , 14(1), pp. 114-136.	To examine the relationship between NIC and Corruption Perception Index	es	2013	e, k, l	3	10	1	2	Poland
Ståhle, P. and Bounfour. A., 2008, Understanding dynamics of intellectual capital of nations, <i>Journal of Intellectual Capital</i> , 9(2), pp. 164-177.	To create understanding on the dynamics of IC at national point of view	e m	2008	d	5	103	1	1	Finland
Tomé, E., 2004, Intellectual capital, social policy, economic development and the world evolution, <i>Journal of Intellectual Capital</i> , 5(4), pp.648-665.	To study the relation between IC and economic development, for example stable political democracy	m	2004	a, e	6	30	2	2	Portugal
van Hemert., P. and Nijkamp P., 2010, Knowledge investments, business R&D and innovativeness of countries: A qualitative meta-analytic comparison, <i>Technological Forecasting and Social Change</i> , 77(3), pp. 369-384.	To show the competitiveness of industries in the international arena sustained by the dynamic interaction between national, regional and sectoral innovation systems	c	2010	e, l	4	39	1	1	Netherlands
Zanakis, S.H. and Becerra-Fernandez, I., 2005, Competitiveness of nations: A knowledge discovery examination, <i>European Journal of Operational Research</i> , 166(1), pp. 185-211.	To present the insights gained from the use of data mining and multivariate statistical techniques to identify countries competitiveness factors and knowledge discovery in databases (KDD)	c	2005	a, c, d, f	4	96	1	1	USA

Authors, articles and (1.) article type	2. Main focus/ research question	3.	4.	5.	6.	7.	8.	9.	10.
Country analysis (C):									
Fleisher, B.M., McGuire, W.H., Smith, A.N. and Zhou, M., 2015, Knowledge capital, innovation, and growth in China, <i>Journal of Asian Economics</i> , 39, pp. 31-42.	To study the relation between industry-level investments and knowledge capital	c	2015	b, c, f	1	5	1	1	USA
Frederick, H.H. and McIlroy, D., 1999, New Zealand and its competitors in the knowledge economy, <i>Telematics Informatics</i> , 16(4), pp. 177-217.	To put New Zealand into world perspective by assessing its knowledge economy benchmarks against its competitors	c	1999	f, l	2	22	1	0	New Zealand
Golovchanskaya, E.E., Shakhovskaya, L.S., Korotkevich, A.I., and Lysiankova, M.V., 2018, Intellectual resource as a key resource of entrepreneurial activity in the structure of assessment of the national (Russia) economy's intellectual activity: Theory and methodology of research, <i>Espacios</i> , Vol 39(28), pp. 18-25.	To develop a methodology for assessment of national economy's intellectual activity index	s	2018	a, b, e, f, k	1	0	1	1	Belarus
Joia, L.A., 2008, The impact of government-to-government endeavors on the intellectual capital of public organizations, <i>Government Information Quarterly</i> , 25(2), pp. 256-277.	To measure the variation of the intellectual capital in public organizations involved in government-to-government endeavors	c	2008	j	1	24	1	0	Brazil
Käpylä, J., 2012, Towards a critical societal knowledge management, <i>Journal of Intellectual Capital</i> , 13(4), pp. 288-304.	Aim to build a conceptual foundation for national intellectual capital performance and to construct a multidimensional measurement system for Finland (social, economic and ecological)	e m s	2012	d		47	1	2	Finland
Lin, C. Y.Y. and Edvinsson, L., 2013, National intellectual capital in Israel and financial crisis impact, <i>International Journal of Knowledge-Based Development</i> , 4(3), pp. 245-273.	To expand writer's NIC research and examine the financial crisis impact	s	2013	c, d, e, g, l	1	9	1	1	Taiwan
Lopes, I.T. and Serrasqueiro, R.M., 2017, The influence of culture and transparency on global research and development intensity: An overview across Europe, <i>Contaduría y Administración</i> , 62(4), pp. 1408-1422.	To explore the effect of culture and transparency, as drivers of business attractiveness, on global R&D intensity	c	2017	k, l	4	2	1	1	Portugal
Łukasiewicz, G., 2013, Macroeconomic determinants of intellectual capital quality, <i>Education of Economists & Managers</i> , 27(1), pp. 9-23.	To present the concept of NIC, measurement and quality determinants of it	e	2013	b		1	2	0	Poland

Authors, articles and (1.) article type	2. Main focus/ research question	3.	4.	5.	6.	7.	8.	9.	10.
Salonius, H and Lönnqvist, A., 2012, Exploring the policy relevance of national intellectual capital information, <i>Journal of Intellectual Capital</i> , 13(4), pp. 331-342.	To examine NCI from the perspective of policy makers	e m s	2012	b, d, e, f, j	1	34	2	1	Finland
Schneider, U., 2007 The Austrian National Knowledge Report, <i>Journal of Knowledge Management</i> , 11(5), pp. 129-140.	To examine the transferability of the IC approach methodology from the corporation to the national level	m s	2007	a, e, f, g, l	1	20	2	0	Austria
Stavropoulos, S., Wall, R. and Xu, Y., 2018, Environmental regulations and industrial competitiveness: Evidence from China, <i>Applied Economics</i> , 50(12), pp. 1378-1394.	To explain the association between environmental regulations and IC in China	e	2018	d, e	1	0	0	0	Netherlands
Tomé, E. , 2008, The hidden face of intellectual capital: social policies, <i>Journal of Intellectual Capital</i> , 9(3), pp. 499-518.	To analyse the societal supply of IC	m	2008	a, c, e, g	5	10	1	1	Portugal
Tomé, E., 2011, Intellectual capital reporting: A conceptual study with application in the Portuguese case, <i>International Journal of Learning and Intellectual Capital</i> , 8(4), pp. 436-458.	To analyse the reporting of IC in Portugal	s	2011	c, f, h	1	6	1	1	Portugal
Zaman, G., Dumitrascu, R. A. and Dumitrascu, V., 2012, What is Romania's wealth? The foundation of a national wealth evaluation econometric model, <i>Romanian Journal of Economic Forecasting</i> , 15(3), pp. 80-96.	To evaluate Romania's national wealth during 2000-2009	s	2012	a, b, f	1	4	1	1	Romania
Special aspect articles (D):									
Lee, I., Lin, C.Y.Y. and Lin, T., 2017, The creation of national intellectual capital from the perspective of Hofstede's national culture, <i>Journal of Intellectual Capital</i> , 18(4), pp. 807-831.	To explain the difference of NIC from the perspective of national culture	e m s	2017	d, l	4	0	2	2	Taiwan
López, V.R. and Navarro, J.L.A., 2012, A new proposal to ranking countries based on their environmental performance, <i>Ovidius University Annals, Series Economic Sciences</i> , 12(2), pp. 161-166.	Environments role in nation's wealth	e	2012	a, h, k, l	5	0	1	1	Spain
Park, E.G. and Oh, W., 2018, Trust, ICT and income: Their relationships and implications, <i>Online Information Review</i> , 42(6), pp. 268-281.	To examine the relationship and interactions among trust, information and ICT and country income levels	e m	2018	a, c, l	4	0	2	2	Canada
Pelle, A. and Végh, Z.V., 2015, EU member states' ability to attract intellectual capital in times of crisis, <i>Competitiveness Review</i> , 25(4), pp. 410-425.	To assess how the resent financial and economic crisis has affected EU member states' ability to attract intellectual capital	m	2015	b, g	4	1	2	2	Hungary

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Piekkola, H., 2018, Broad-based intangibles as generators of growth in Europe, <i>Economics of Innovation & New Technology</i> , 27(4), pp. 377-400.	To analyze broad performance-based measurement of intangibles in EU countries connected in financial crisis period 2008-2013	e	2018	e	4	2	1	2	Finland
Vahanyan, G.A., Vahanyan, H. and Ghazaryan, M., 2018, Interactive innovative tool for early diagnosis of global pre-crisis processes (based on measurement and assessment of the virtual intellectual capital, <i>Journal of Intellectual Capital</i> , 20(2), pp. 190-207.	To present the great importance and impact of the virtual intellectual capital and to present a new method for studying megaeconomy	m	2018	a, i	1	0	0	0	Armenia
Zhang, K.H., 2010, How does globalization affect industrial competitiveness? <i>Contemporary Economic Policy</i> , 28(4), pp. 502-510	To study how globalization affects a country's industrial performance	e	2010	c, e	5	20	1	2	USA