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Fourteen years of research on smart city and community: A bibliometric analysis

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Introduction

- Currently, the development of research on smart cities has become an inexhaustible issue. Government, private sector and academia pay a lot of attention to smart cities.
- Of the many literature reviews on the topic of smart cities, no research has focused on how smart cities are in a community.
- The problems in this study can be formulated as follows: (1) How does the historical development of articles and topics in the study of climate change and global warming in the context of public administration? (2) Who are the most impactful authors, affiliations, journals, and countries? (3) How is the development of intellectual discourse and relationship within these two concepts?



Methods: Bibliometrics approach

1,968

- Step 1: Main query searched ("smart city " AND "community") in the title and abstract

1,821

- Step 2: Query limited to Document type: Article, Source type: Journal, Language: English, WoS Index: SSCI, SCIE, AHCI

736

- Step 3: Focused on research smart city and community

722

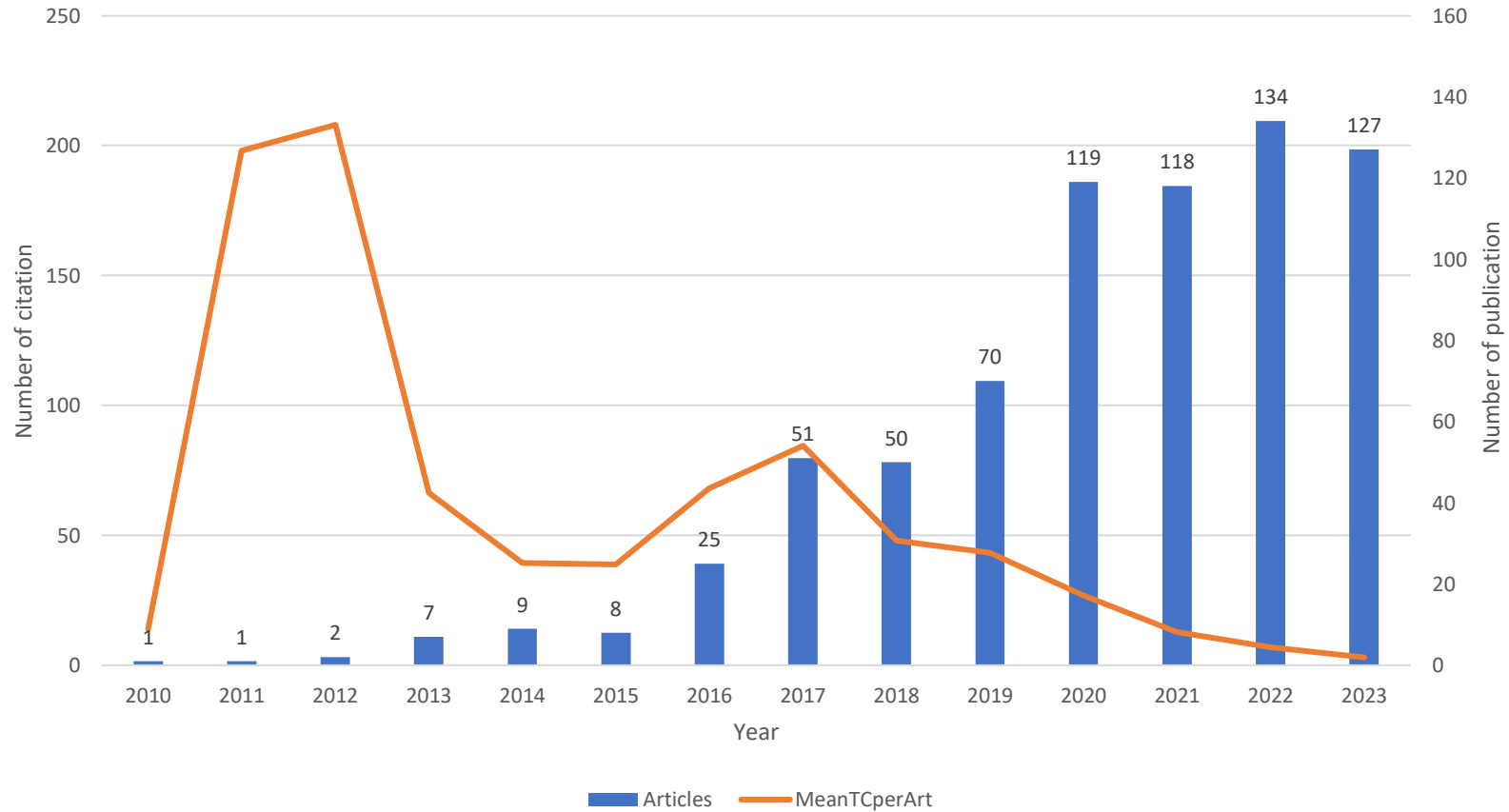
- Step 4: Final articles for analysis



Inclusion & exclusion criteria

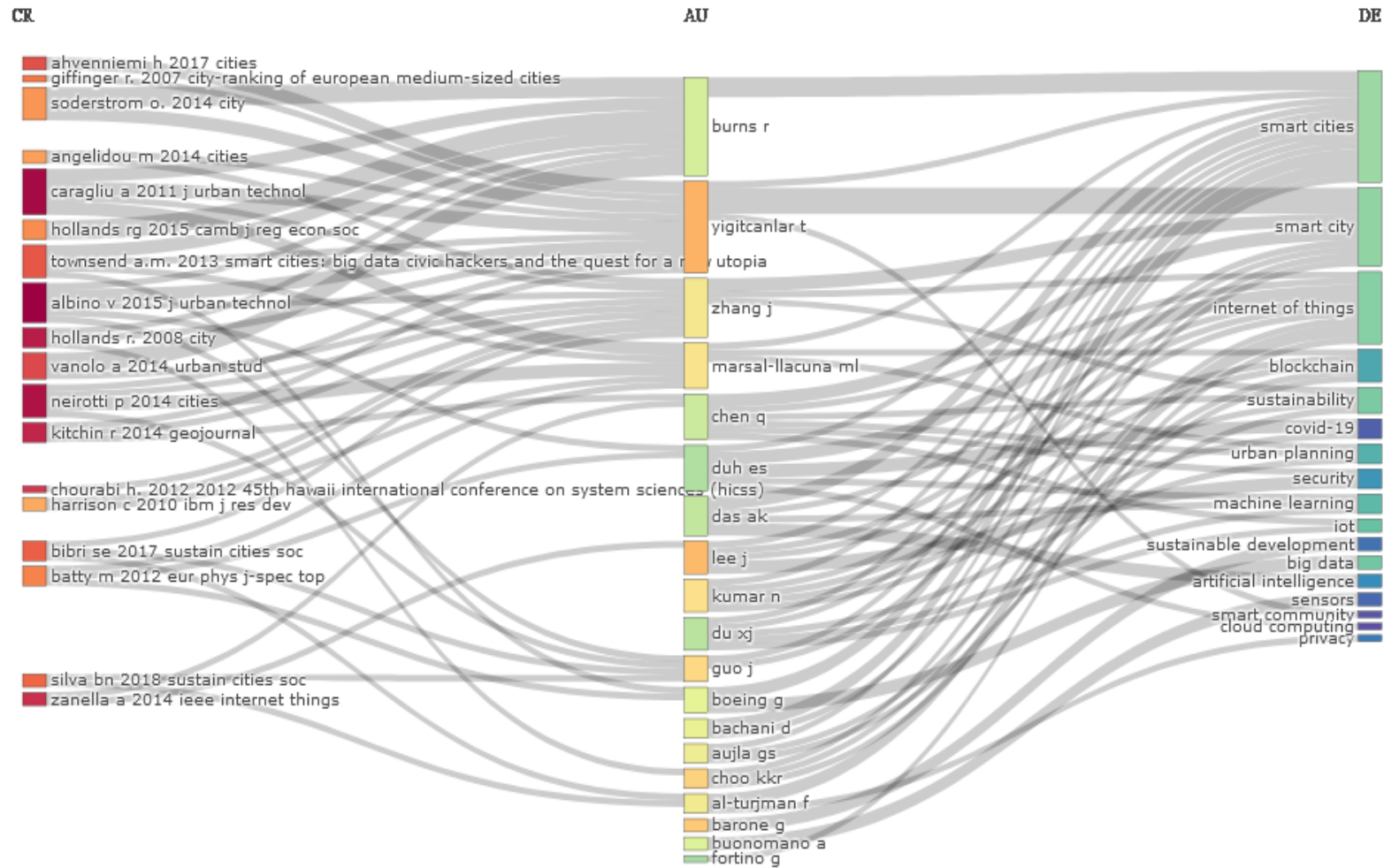
Category	Criteria for inclusion	Criteria for exclusion
Keyword	Smart city and community	Non smart city and community
Language	English	Non English
Document type	Article	Review article
Source type	Journal	Book, book section, proceeding
Wos Index	SCIE, SSCI, A&HCI	ESCI

RQ (1): How does the historical development of articles and topics in the study



Graphic 1. Historical development of the articles and citations

RQ (1): How does the historical development of articles and topics in the study?



RQ (2): Who are the most impactful authors?

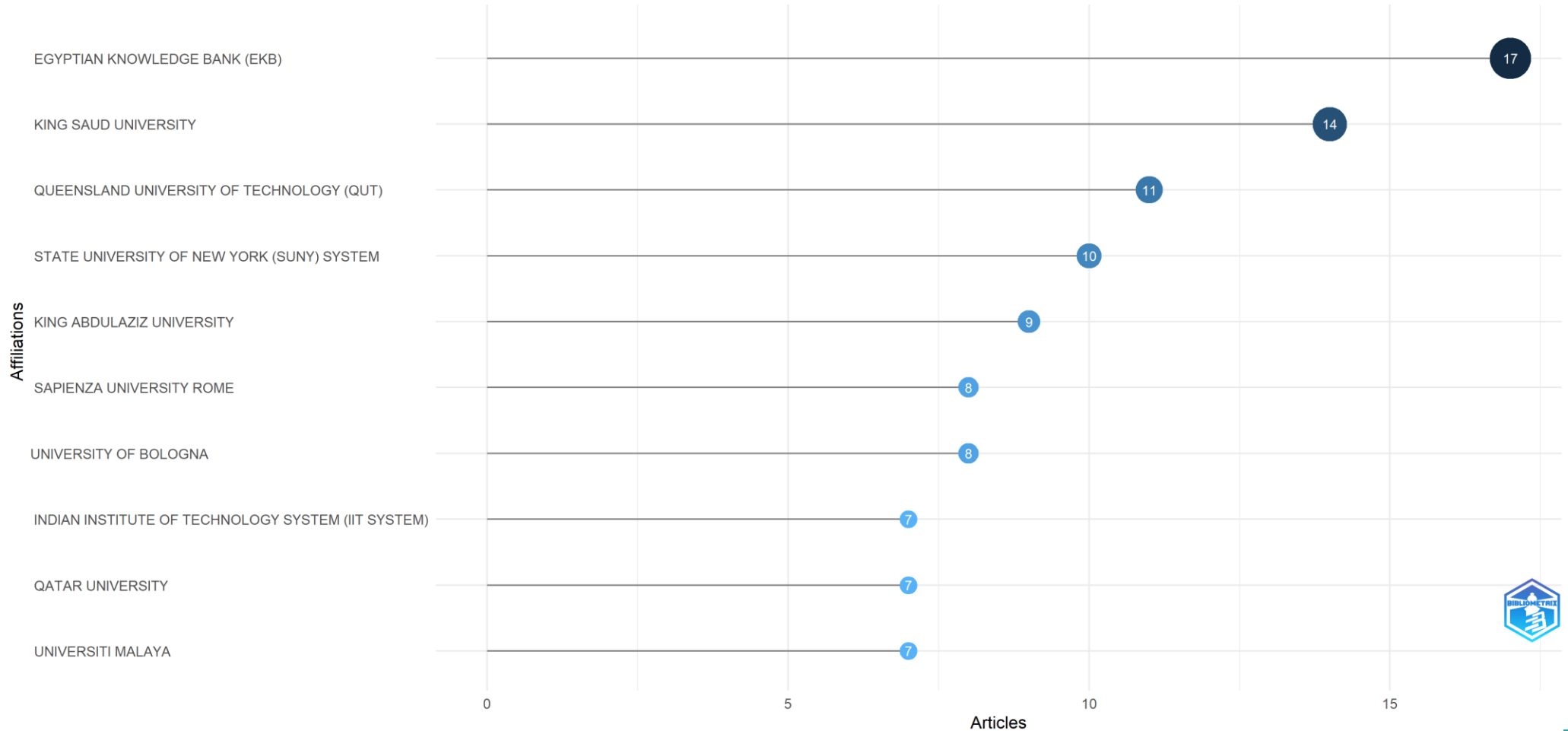
No	Author	Article	Percent	TLCS	TLCS/t	TLCSx	TGCS	TGCS/t	TLCSe
1	Yigitcanlar T	6	0.8	25	4.23	19	484	83.44	6
2	Kamruzzaman M	3	0.4	20	2.98	15	381	56.36	9
3	Deakin M	2	0.3	19	1.84	19	496	51.39	3
4	Lima M	2	0.3	16	2.70	15	253	42.47	6
5	Appio FP	1	0.1	15	2.50	14	244	40.67	7
6	Buys L	1	0.1	15	2.14	13	247	35.29	7
7	Cardullo P	2	0.3	15	2.45	14	248	40.26	11
8	da Costa EM	1	0.1	15	2.14	13	247	35.29	7
9	Ioppolo G	1	0.1	15	2.14	13	247	35.29	7
10	Kitchin R	2	0.3	15	2.45	14	248	40.26	11

Note: TLC, total local citation; TLC/t, total local citation per year; TLC/x, total local citation per year; TGC, total global citation; TGC/t, total global citation per year

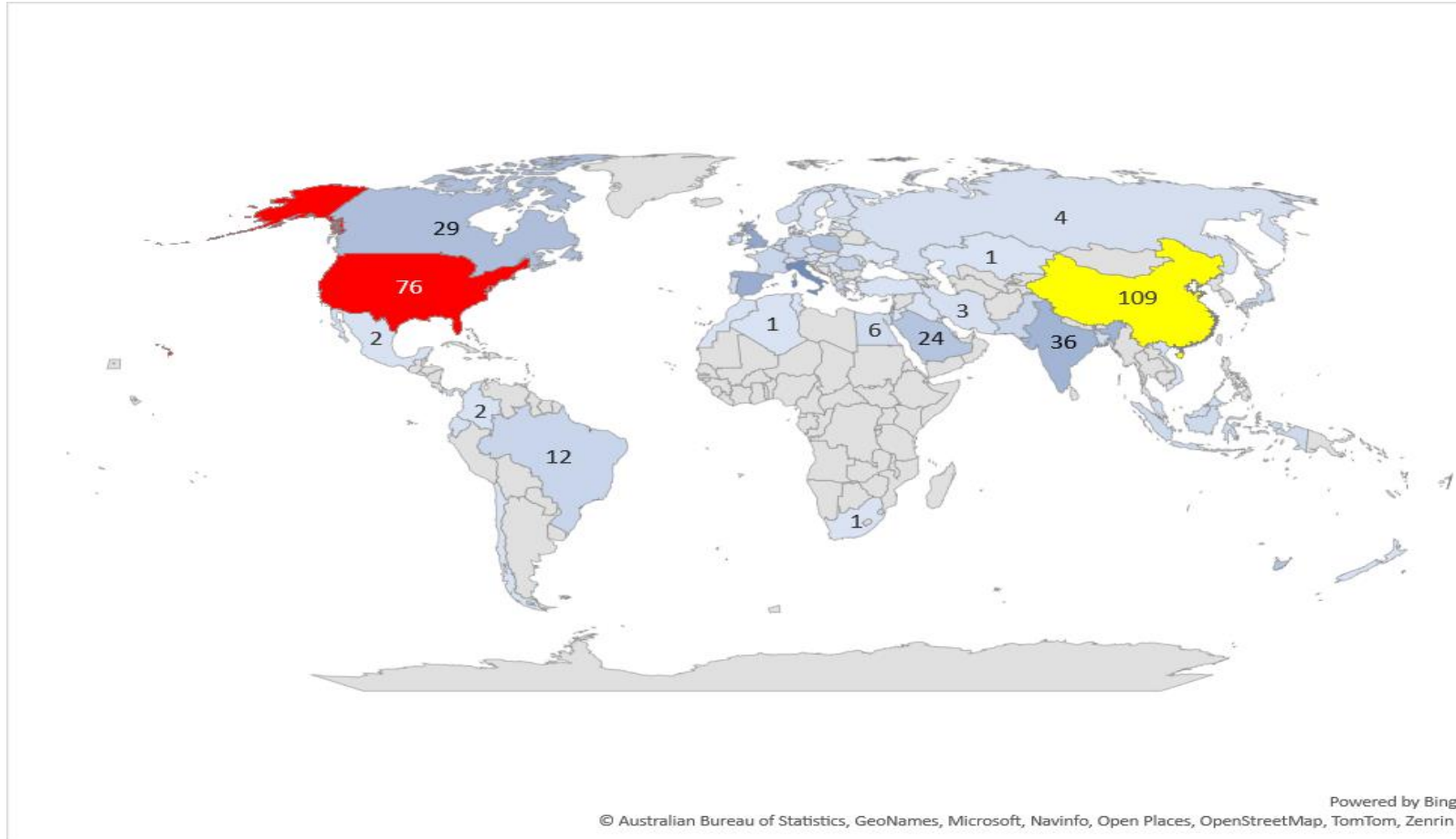
RQ (2): Who are the most impactful articles?

Rank	Article	TLCS
1	Lazaroiu, G. C., & Roscia, M. (2012). Definition methodology for the smart cities model. <i>Energy</i> , 47(1), 326-332.	15
2	Yigitcanlar, T., Kamruzzaman, M., Buys, L., Ioppolo, G., Sabatini-Marques, J., da Costa, E. M., & Yun, J. J. (2018). Understanding 'smart cities': Intertwining development drivers with desired outcomes in a multidimensional framework. <i>Cities</i> , 81, 145-160.	15
3	Appio, F. P., Lima, M., & Paroutis, S. (2019). Understanding Smart Cities: Innovation ecosystems, technological advancements, and societal challenges. <i>Technological Forecasting and Social Change</i> , 142, 1-14.	15
4	Vanolo, A. (2016). Is there anybody out there? The place and role of citizens in tomorrow's smart cities. <i>Futures</i> , 82, 26-36.	14
5	Cardullo, P., & Kitchin, R. (2019). Smart urbanism and smart citizenship: The neoliberal logic of 'citizen-focused' smart cities in Europe. <i>Environment and Planning C: Politics and Space</i> , 37(5), 813-830.	13
6	Yeh, H. (2017). The effects of successful ICT-based smart city services: From citizens' perspectives. <i>Government Information Quarterly</i> , 34(3), 556-565.	12
7	Leydesdorff, L., & Deakin, M. (2011). The triple-helix model of smart cities: a neo-evolutionary perspective. <i>Journal of Urban Technology</i> , 18(2): 53-63.	10
8	Mora, L., Bolici, R., & Deakin, M. (2017). The first two decades of smart-city research: A bibliometric analysis. <i>Journal of Urban Technology</i> , 24(1), 3-27.	9
9	Macke, J., Casagrande, R. M., Sarate, J. A. R., & Silva, K. A. (2018). Smart city and quality of life: Citizens' perception in a Brazilian case study. <i>Journal of Cleaner Production</i> , 182, 717-726.	9
10	Sun, Y., Song, H., Jara, A. J., & Bie, R. (2016). Internet of things and big data analytics for smart and connected communities. <i>IEEE access</i> , 4, 766-773.	8

RQ (2): Who are the most impactful affiliations?

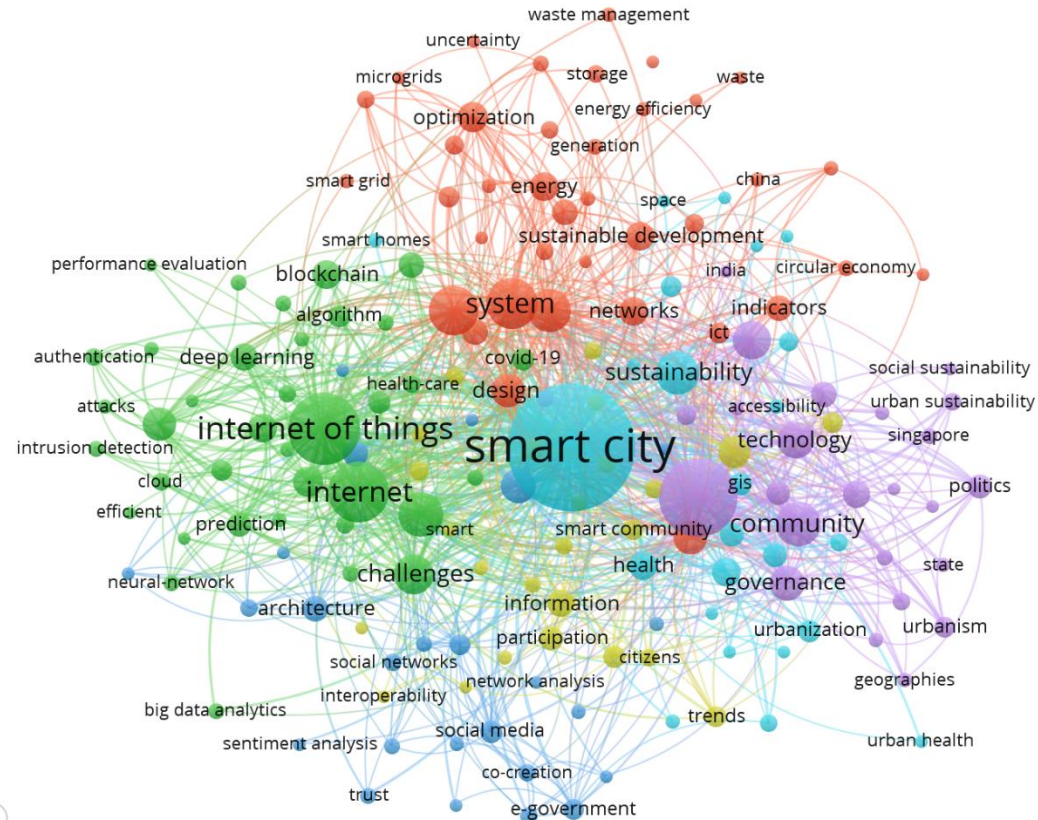


RQ (2): Who are the most impactful countries?



RQ (3) How is the development of intellectual discourse and relationship within these two concepts?

Six growing clusters of research





Results and Discussion

This study attempts to systematically review the literature on smart cities and communities using bibliometrics. Our analysis shows several topics, namely smart cities, smart cities, internet of things, blockchain, sustainability, mechince security, urban planning, covid 19, sustainable development, artificial intelligence, sensors, privacy, smart communities, and cloud computing.



Conclusion

- Analyzing data from 722 ESCI WoS articles, we suggest that the number of articles and citations fluctuates every year. However, 2012 where this year only 2 journals were published but had the highest number of citations. We also found 20 journals with the most citations. Regarding authors, the top five authors were identified: Yigitcanlar Tan, Kamruzzaman M, Deakin M, Appio FP ,and Buys L. The results revealed 6 cluster studies and 177 sub-trending topics.
- This research contributes to the study of smart cities and communities. This finding is expected to be a reference for other researchers to find out the development of research on smart cities and communities, and can be used as a reference, especially on smart city research topics