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Discourse on digital government and regulation: A bibliometric analysis

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Abstract: This study aims to discuss digital government and regulation, analyzed through the bibliometric approach with the Scopus database for the last 20 years and visualized through the VOSviewer software version 1.6.16. The results indicate that the topic of e-government has become essentially prominent and has been the most discussed in the past two decades. Approximately 41.1% of digital government and regulation articles are classified under the subject area of 'Computer Science', continued by Social Sciences (18.3%), and Business, Management and Accounting (10.2%), with the majority of being 'All Open Access' (46%). The trend of publication in this field includes the 24 articles / year; with 43% publications are published in the conference proceedings.

Keywords: scientific discourse; digital government and regulation; bibliometric analysis; VOSViewer

1. Introduction

This article discusses the discourse digital government and regulation during the last two decades (2000-2020). The discourse understanding is inseparable from bibliometric analysis (Lee, 2020; Mifrah et al., 2020; Omoregbe et al., 2020; Saravanan & Dominic, 2014), referring to the incorporation of various frameworks and methods to analyze citations from scientific publications. Such attempt leads to the development of different metrics to gain insight into the intellectual structure of a broad academic discipline and to evaluate the impact of a particular field of study (Akhavan et al., 2016; Putera, Suryanto, et al., 2020).

In this study, digital government and regulations refer to a number of acknowledged concepts, including Information Communication Technology (ICT) based platforms for any citizen to access government information and services (Silverman, 2016; Veiga et al., 2016). In addition, digital government discourse has been inevitable from the understanding of e-government which includes six types, ranging from Government with individuals - delivering services (GwIS), Government with individuals - political process (GwIP), Government with business as a citizen (GwBC), Government with business in the marketplace (GwBMKT), Government with employees (GwE), and Government with government (GwG) (Belanger & Hiller, 2006; Fawareh & Al-abed, 2020; Samion & Mohamed, 2020). In addition, the terms refers to the concept of online government (Aminah et al., 2018; Gulati & Yates, 2011), including the utilization of big data in government (Putera, Manik, et al., 2020; Zhou et al., 2020), Internet of Things and Blockchain (Allam & Dhunny, 2019; Maina & Singh, 2019), Electronic Portfolio Management System (EPMS) (Agbozo & Asamoah, 2019), digital library (Abraham et al., 2020; Sun & Yuan, 2012), and digital record and digital archiving (Ghosh & Roy, 2021; Narasaiah et al., 2021; Rahman, 2021).

2. Research Methods and Strategies

This research is considered as a bibliometric study (Putera & Rostiena, 2021), utilizing data from the Scopus data base accessed on January 11, 2021. The search strategy is performed by using the following query (((TITLE-ABS-KEY ("e-government") OR TITLE-ABS- KEY ("digital government") OR TITLE-ABS-KEY ("online government") OR TITLE-ABS-KEY (e-gov) AND TITLE-ABS-KEY ("regulation"))) AND (EXCLUDE (PUBYEAR, 2021)) OR EXCLUDE (PUBYEAR, 1981)) AND (LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2019) OR LIMIT-TO (PUBYEAR, 2018) OR LIMIT-TO (PUBYEAR, 2017) OR LIMIT-TO (PUBYEAR, 2016))). Furthermore, the visualization analysis is conducted through the VOSviewer software version 1.6.16.

3. Result and Discussion

Articles on digital government and regulation in the Scopus data base in the last two decades are mostly categorized as 'All Open Access' (46%), following the other 28% regarded as published versions or manuscripts accepted for publication available at repository (Green), and the other 13% regarded as published versions of record or manuscript accepted for publication. The publisher intends to provide temporary or permanent free access (Bronze), in which approximately 10% are documents or journals publishing the open access (Gold) and only 3% documents are in journals which provide authors regarding the choice of publishing open access (Hybrid Gold) as illustrated in Fig.1.

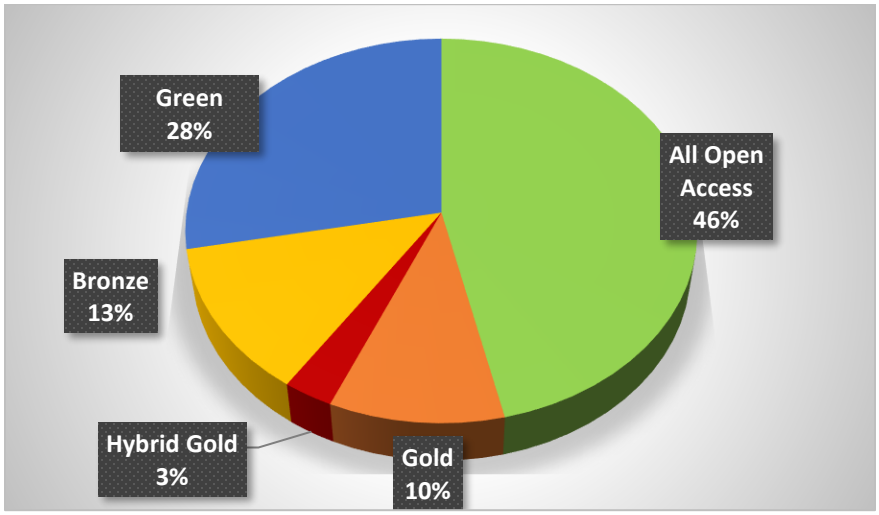

Fig. 1

Open access types available in Scopus for digital government and regulation articles

Fig.2 indicates the publication trend of articles on digital government and regulation in the period of 2000-2020, by which the average annual publication in this field is reported as 24.2 articles / year or in other words, there are (at least) 24 articles have been published with the topic of digital government and regulation annually indexed in the Scopus database. In Fig. 2, it is apparent that the raise in publications in this field has a fluctuating trend. The year of 2019 was recorded as the year with the most publications in this field for 20 years. Apart from 2019, the highest publications

were reported in 2016 with 38 articles, in 2011 with 37 articles, and in 2017 and 2010 with 35 articles.

Fig. 2

Publication trends on digital government and regulation

There are 43% of digital government and regulation publications published in conference proceedings. Meanwhile, the remaining 34% is published in the Journal, 16% is in the Book Series, and 7% is in the Book (see Fig.3). The complete distribution of the publication of articles on digital government and regulation is illustrated in Table 1. In the period of 2000-2005, several digital government and regulation publications were published in the Book Series. In the period of 2006-2010, the authors of digital government and regulation initiated to publish various articles in the Conference Proceedings. Meanwhile, in the period of 2011-2015 the number of publications were published in the 'Journal' was the most, and the period of 2016-2020 was recorded as the occasion that published the most articles in the Conference Proceedings.

Table 1: Publication articles on digital government and regulation based on published sources

	2000-2005	2006-2010	2011-2015	2016-2020	
Conference Proceeding	12	64	49	82	207
Journal	9	27	52	78	166
Book Series	16	9	19	32	76
Book	0	13	17	5	35
	37	113	137	197	484

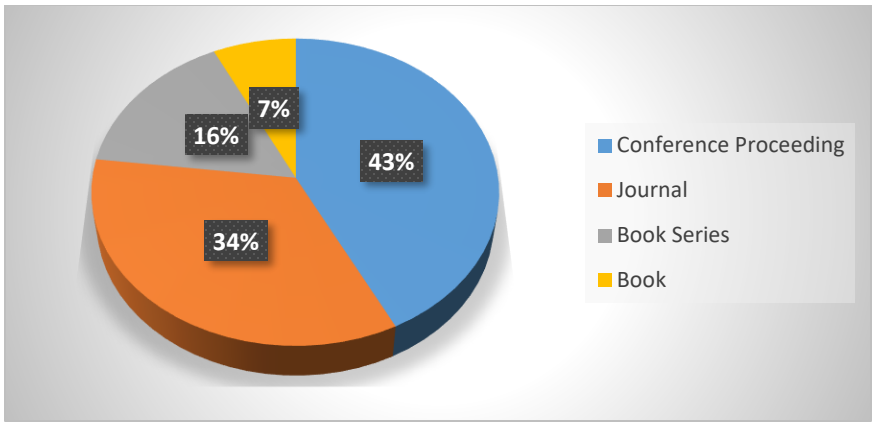

Fig. 3

Distribution of publication resources from publications on digital government and regulation topics

Upon observing the existing data, approximately 41.1% of digital government and regulation articles were published with the subject area of 'Computer Science', followed by Social Sciences (18.3%), and Business, Management and Accounting (10.2%) as seen in Fig.4.

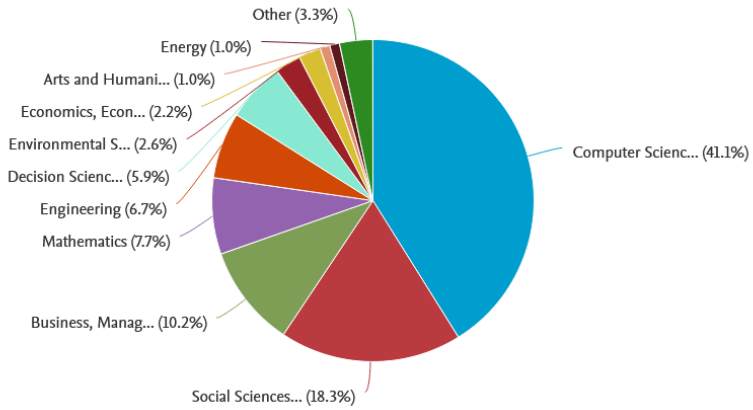

Fig. 4

Publication of articles on digital government and regulation based on subject areas

During the first period of development in 2000-2005 (see Fig.5), discourse on digital government and regulation formed the nine clusters. Cluster 1 (colored red) is occupied by 10 research topics such as e-commerce and e-society, then cluster 2 (colored green) has 10 research topics such as digital government and information sharing. In cluster 3 (colored blue), there are 8 research topics such as e-rulemaking and e-

government initiatives. In cluster 4 (colored yellow) there are 8 research topics such as regulation and internet. Cluster 5 (colored purple) has 7 topics, with research topics such as e-government, building permissions, and e-Europe. For cluster 6 (colored light blue), there are 6 research topics such as citizens participation. While cluster 7 (orange) indicates 5 research topics such as compliance check, cluster 8 (colored brown) has 5 research topics such as government and environmental policy, and cluster 9 (colored pink) has 4 research topics such as accessibility.

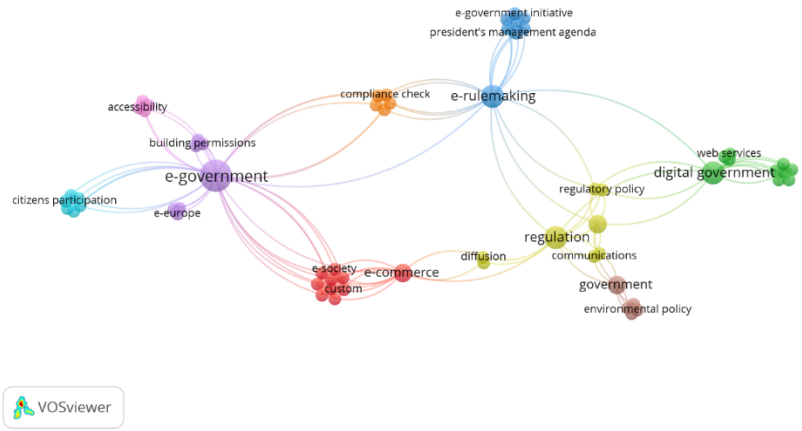

Fig. 5

Discourse on digital government and regulation in 2000-2005

During the second period of development in 2006-2010 (see Fig.6), discourse on digital government and regulation formed nine clusters as well. Cluster 1 (colored red) is occupied by 5 research topics such as government, and then cluster 2 (colored green) has 5 research topics such as digital information systems. In cluster 3 (colored blue), there are 5 research topics such as the public sector. In cluster 4 (colored yellow), there are 4 research topics such as regulation and digital government. Cluster 5 (colored purple) has 4 topics, with research topics such as e-customs, diffusion of innovation. For cluster 6 (colored light blue) there are 4 research topics such as informatization. Meanwhile in cluster 7 (colored orange), there are 3 research topics such as e-government, and cluster 8 (colored brown) has 3 research topics such as electronic

governance, and cluster 9 (colored pink) has 2 research topics such as decision support systems.

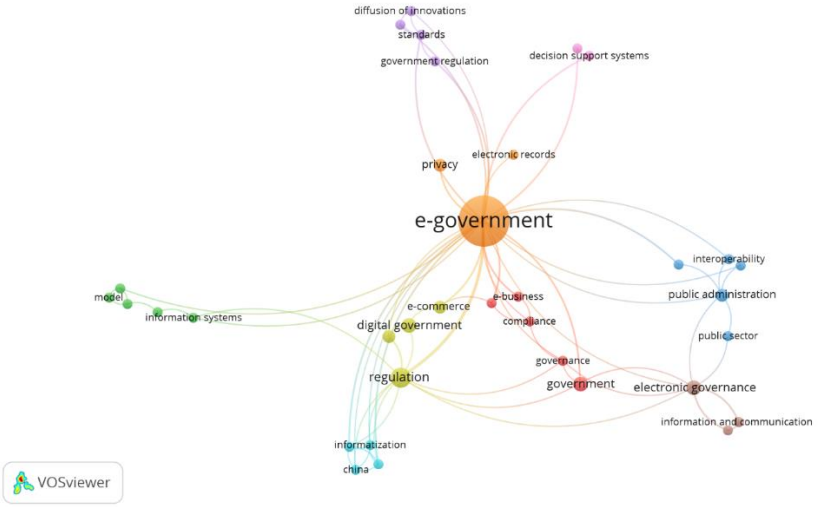

Fig. 6

Discourse on digital government and regulation in 2006-2010

During the third period of development in 2011-2015 (see Fig.7), discourse on digital government and regulation formed the ten clusters. Cluster 1 (colored red) is occupied by 8 research topics such as ICT and e-governance, then cluster 2 (colored green) has 7 research topics such as e-participation. In cluster 3 (colored blue), there are 6 research topics such as regulation and social networking services. In cluster 4 (colored yellow), there are 6 research topics such as e-procurement. Cluster 5 (colored purple) has 5 topics, with research topics such as e-government. Cluster 6 (colored light blue) includes 4 research topics such as e-rulemaking. Meanwhile in cluster 7 (colored orange), there are 4 research topics such as internet policy and government regulation, and cluster 8 (colored brown) has 4 research topics such as public sector information, cluster 9 (colored pink) has 2 research topics such as access control, and cluster 10 only has 1 research topic, which is public participation.

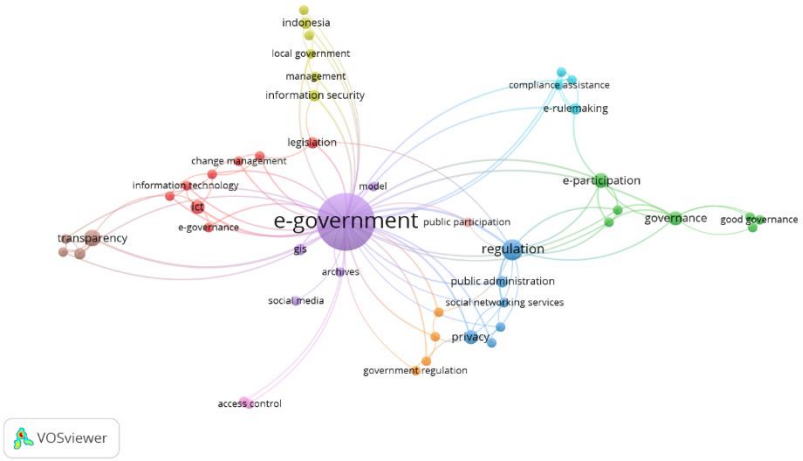

Fig. 7

Discourse on digital government and regulation in 2011-2015

During the fourth period of development in 2016-2020 (see Fig.8), discourse on digital government and regulation formed the eleven clusters. Cluster 1 (colored red) is occupied by 11 research topics such as block chain and information security, and then cluster 2 (colored green) has 11 research topics such as social media and artificial intelligence. In cluster 3 (colored blue), there are 10 research topics such as open data and open government. In cluster 4 (colored yellow), there are 9 research topics such as digital government and administrative law. Meanwhile in cluster 5 (purple), there are 9 research topics, such as transparency and e-commerce. For cluster 6 (colored light blue), there are 6 research topics such as regulation and smart government. Meanwhile in cluster 7 (orange), there are 5 research topics such as ICT and e-service, cluster 8 (colored brown) has 5 research topics such as e-government and public administration reform, cluster 9 (pink) has 5 research topics such as e-procurement, cluster 10 only has 4 research topics, which is cloud computing, and cluster 11 has 4 topics, including public service and service state.

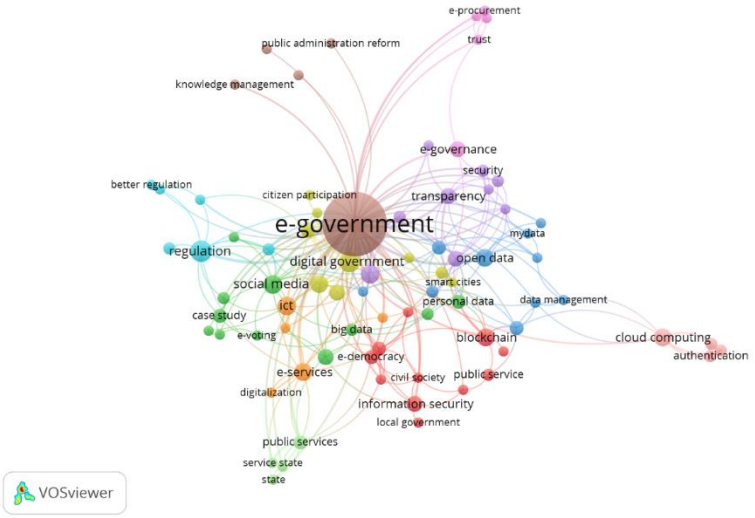

Fig. 8

Discourse on digital government and regulation in 2016-2020

4. Conclusion

Discourse on digital government and regulation was initiated with the publication of the first article (on the Scopus data base) in 2001, further expanded to 2020. However, based on the number of articles on this topic, the annual Scopus database indicates an improving trend since 2015. Topic such as e-government has become essentially prominent and has been widely discussed in the last two decades. In addition, topics related to regulations in digital government, government data processing, e-services, and open government have served as the most discussed topics in articles for the past 20 years.

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