RELATIONSHIP OF INNOVATION, INTERNET USE AND OPEN DATA TO OPEN GOVERNMENT EFFECTIVENESS IN IBEROAMERICAN COUNTRIES

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Summary

A systematic review was carried out on the production and publication of research papers on the study of the Relationship between Innovation, Internet Use and Open Data with the effectiveness of Open Government in Ibero-American countries under the PRISMA approach (Preferred Reporting Items for Systematic reviews and Meta-Analyses). The purpose of the analysis in this document was to determine the main characteristics of the publications registered in the Scopus and Wos databases during the year and their scope in the study of the proposed variables, achieving the identification of 146 publications in total. Thanks to this first identification, it was possible to refine the results through the keywords entered in the search button of both platforms, which were INNOVATION, INTERNET, OPEN DATA, and OPEN GOVERNMENT, reaching a total of 17 documents, already excluding duplicates and those

that did not meet the analysis criteria. The scientific publications identified were analyzed in an attempt to determine the relationship between innovation, the use of the Internet and open data with the effectiveness of Open Government in Ibero-American countries based on the principles of transparency in access to information on issues of general interest, such as accountability of government actors, social investment, tax collection, among others.

Keywords: Innovation, Internet, Open Data, Open Government

1. Introduction

The first attempts of what today is known as Open Government arose as a result of the discussion exposed in the United States Congress regarding the approval of a Public Information Act in 1950 (Yu & Robinson, 2012) which sought to guarantee oversight by individuals interested in knowing the management of public resources in an attempt to reduce corruption and misuse of public resources. However, it was not until 1957, in The George Washington Law Review of the George Washington University, coined by Parks in "The Open Government Principle: Applying the Right to know under the Constitution," that the term "Open Government Principle" was officially introduced (PARKS, 1957). Open Government was officially introduced in that publication and referred to the possibility of exercising oversight over governmental movements in managing economic resources. In the sixties, the use of terms such as "Electronic Government" and "Virtual Government" was common since the use of Information and Communication Technologies (ICT) began to be implemented for specific processes in terms of policy and allocation of public resources by government actors, thus reaffirming Open Government as a fundamental strategy in the generation of transparency and reduction of corrupt acts through the monitoring of open data available on public platforms easily accessible by society in general (Acosta & Pineda, 2016). However, it is important to clarify that although both terms combine similar strategies in terms of the use of ICT, in practice, they do not correspond to the same definition since E-Government covers processes other than the monitoring of resources, such as procedures, and consultations, among others. At the same time, Open Government implies, in many cases, a profound transformation of how socio-political interaction takes place (Cruz-Rubio, 2015). Thus, one of the main characteristics inherent to the development and generation of an Open Government is the availability of information to society and how they can be vigilant of all processes and decision-making through ICT tools, contributing to the construction of the ideal democracy (ARAUJO, ALBANO, GERMANO, & TAKAOKA, 2012). This seeks to generate the active participation of society in terms of control in the use of public resources and reduction of corruption as an important factor in the great evils that have affected Latin American nations (Nicolás & Catachura, 2020). As described above, it is important to know the papers published in high-impact journals indexed in Scopus and Wos databases as a theoretical basis for the generation of new knowledge concerning the study of Open Government and Open Data and the use of the Internet for accessibility to public information, so this research has been carried out to answer the question How has been the publication of research papers concerning the study of the relationship between innovation, internet use and open data with the effectiveness of open Government in Ibero-American countries during the period 2017-2021?

2. General Objective

To analyze from a bibliographic perspective, the production of high-impact research papers indexed in Wos and Scopus databases, on the variables Innovation, Open Data, Open Government, based on the PRISMA methodology.

Methodology

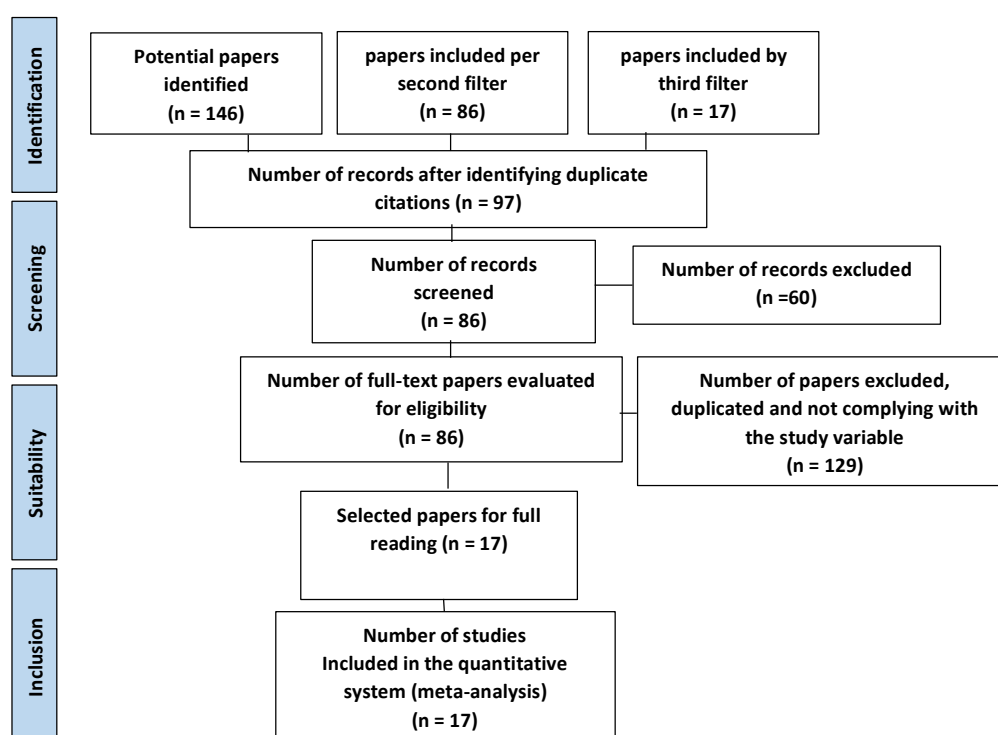The present research is of qualitative type; according to Hernández et al. (2015), qualitative approaches correspond to researches that perform the procedure of obtaining information to review and interpret the results obtained in such studies; for this purpose, the search for information was carried out in the Scopus and Wos databases through the words INNOVATION, INTERNET, OPEN DATA, OPEN GOVERNMENT.

3.1 Research design

The research design proposed for this research was the Systematic Review, which involves a set of guidelines to carry out the analysis of the data collected, framed in a process that began with the coding to the visualization of theories (Strauss & Corbin, 2016). On the other hand, it is stated that the text corresponds to a descriptive narrative because it is intended to determine how the levels of the variable effect. After reviewing the academic material obtained from the scientific journals, the theories on knowledge management were analyzed and interpreted (Hernández et al., 2015).

The results of this search are processed as shown in Figure 1, which expresses the PRISMA technique for identifying documentary analysis material. It was taken into account that the publication was published during the period between the years 2017 and 2021, limited to scientific production originated in institutions of Ibero-American countries and open to any area of knowledge, as well as to any publication, namely: Journal Articles, Reviews, Book Chapters, Book, among others.

Figure 1. Flow diagram of systematic review performed under the PRISMA technique (Moher et al., 2009).

Source: Own elaboration; Based on the proposal of the Prisma Group (Moher et al., 2009).

4. Results

Table 1 shows the results after applying the search filters related to the methodology proposed for this research, after recognizing the relevance of each referenced work.

No.	TITLE OF THE RESEARCH	AUTHOR/YEAR	COUNTRY	TYPE OF STUDY	INDICATION
1	*Playing the innovation subsidy game: Experience, clusters, consultancy, and networking in regional innovation support.*	Rodríguez-Pose, A., Belso-Martinez, J. A., & Díez-Vial, I. (2021).	SPAIN, UNITED KINGDOM	QUALITATIVE	SCOPUS
	Open Government and Open Data in Times of COVID-19	Hagen, L., Sandoval-Almazan, R., Okhuijsen, S., Cabaco, S., A. Ruvalcaba-Gomez, E., Villodre, J., ... & Valle-Cruz, D. (2021, June).	MEXICO, SPAIN, THE NETHERLANDS, UNITED STATES	QUALITATIVE	SCOPUS
	Barriers for Open Government Implementation at Municipal Level: The Case of the State of Mexico	Sandoval-Almazan, R., Valle Gonzalez, L., & Millan Vargas, A. (2021, June).	MEXICO	QUALITATIVE	SCOPUS
1	*The role of open innovation, and the performance of european union regions*	Lopes, J. M., Gomes, S., Oliveira, J., & Oliveira, M. (2021).	PORTUGAL	QUALITATIVE	SCOPUS

5	*Open access initiatives in the fight against pandemic. open data and intellectual property in the dissemination of information and knowledge.*	ROSA, S. S. S. D., CORRêA, F. C., & PAVãO, C. M. G. (2021).	BRAZIL	QUANTITATIVE	SCOPUS
	Government data openness and coverage. How do they affect trust in European countries?	Gonzálvez-Gallego, N., & Nieto-Torrejón, L. (2021).	SPAIN	QUALITATIVE	SCOPUS
	A neural blockchain for a tokenizable e-Participation model	Benítez-Martínez, F. L., Hurtado-Torres, M. V., & Romero-Frías, E. (2021).	SPAIN	QUALITATIVE	SCOPUS
	The era of big data and open data in public administration	Aucancela, A. M. C. (2021).	SPAIN	QUANTITATIVE/QUALITATIVE	SCOPUS
	SuDaMa: Sustainable Open Government Data Management Framework for Long-Term Publishing and Consumption	Sánchez-Nielsen, E., Morales, A., Mendo, O., & Chávez-Gutiérrez, F. (2021).	SPAIN	QUALITATIVE	SCOPUS
	Public sector, open innovation, and collaborative governance in lockdown times. A research of Spanish cases during the COVID-19 crisis,2021	Criado, J. I., & Guevara-Gómez, A. (2021).	SPAIN	QUALITATIVE	SCOPUS

Communicating public administration budget data through visualization software: Use of the tool 'where do my taxes go'.	Garcia-Garcia, J., & Alonso-Magdaleno, M. I. (2020).	SPAIN	QUALITATIVE	SCOPUS
Open data initiatives in Brazil: An analysis of the public entities portals	Estima, J., & Pestana, G. C. F. (2019).	PORTUGAL	QUALITATIVE	SCOPUS
The Open Government partnership as a platform for the advancement of Open Science in Brazil	BERTIN, P. R. B., Fortaleza, J. M., SILVA, A. C. D., & Okawachi, M. F. (2019).	BRAZIL	QUANTITATIVE	SCOPUS
Politics, technology, and accountability: The transparency façade of open government data reforms in Paraguay	Garcia, D. R. (2019).	PARAGUAY	QUALITATIVE	SCOPUS
Open Data for Public Administration: Exploitation and semantic organization of institutional web content.	Pena, P., Aznar, R., Montanés, R., & Del Hoyo, R. (2018).	SPAIN	QUALITATIVE	WOS

Key Determinants of Online Fiscal Transparency: A Technology-Organization-Environment Framework	Chen, G., Kang, H., & Luna-Reyes, L. F. (2019).	MEXICO, UNITED STATES	QUANTITATIVE	WOS
Data for Sustainable Platform Economy: Connections between Platform Models and Sustainable Development Goals	Fuster Morell, M., Espelt, R., & Renau Cano, M. (2020).	SPAIN, UNITED STATES	QUALITATIVE	WOS

Table 1. List of articles analyzed

Source: Own elaboration

As mentioned above, the 17 documents listed in the table above correspond to the search performed in the Scopus and Wos databases, limited to Ibero-American countries, without distinction of area of knowledge. It is important to emphasize that prior to the elaboration of Table 1, arguments of competence and relevance were taken into account for the subsequent individual analysis of each text.

4.1 Co-occurrence of words

Figure 2 shows the relationship between the keywords used to search the study material for the elaboration of the systematic analysis proposed for the present research.

Figure 2. Co-occurrence of keywords.

Source: Own elaboration

Open Data was the most frequently used keyword in the publications identified through the search. Its study was related to variables such as Data and Open Government, Public Accounting, Public Policy, Macroeconomics, Economics, Innovation and Technology, and Information Systems, which allows inferring that all ICT tools used in the management of Open Government have been of great interest to the scientific community, as well as their applicability in the different areas where transparency is sought for the development of government strategies. Open innovation also turned out to be one of the most frequently used keywords within the 17 publications analyzed in this article, associated with research in Artificial Intelligence, Public Administration, and Digital Government, through which the meaning has been sought in terms of technological advances applicable to the generation of strategies capable of providing detailed and quality information to the population in general, regarding the movements and decision making by the Government, thus seeking to defend the democracy proposed by the Political Constitution of each country. It is important to mention that the focus of the research points to the benefits for society of having support tools to exercise control and surveillance in the movements executed by government actors and how this process has been more effective since the implementation of ICT tools for this purpose.

4.2 Discussion

The purpose of this article was to analyze, from a systematic perspective, the authors' contribution through their publications to the study of the relationship between Innovation, Open Data, and the use of the Internet with the effectiveness of Open Government in Ibero-American countries. In this way, it is possible to affirm that the publications indicated in the body of this document have carried out research at different levels whose findings contribute to the generation of new knowledge regarding the variables proposed for this study, thus identifying great contributions as contemplated in the article entitled "Barriers to the Implementation of Open Government at the Municipal Level: The Case of the State of Mexico." (Sandoval-Almazan et al., 2021), whose objective was the barriers that hinder the implementation of open Government which is usually top-down, i.e., it starts in the Federal Government, then moves to local governments and finally reaches the municipal or county level. The researchers emphasize that although there is a good amount of research on the application of this

strategy at the national level, very little is known at the municipal level, and within this reality, the aim is to find out what are the barriers that have hindered the implementation of open government programs in Mexican municipalities. To this end, the authors have designed the evaluation of factors such as government confidence (trust), analysis of regulations and barriers to open Government of the Zuiderwijk model. The assessment was applied to 134 public managers from a sample of the State of Mexico municipalities. Among the most relevant findings, the researchers report that one of the most determining factors identified as a barrier to the implementation of an Open Government system is the lack of innovation, that is, investment in technological resources that allow institutionalizing the application of strategies to exercise oversight of decision making in local governments. Innovation is precisely one of the most important issues in the implementation of open government strategies, as shown in the article entitled "Communication of public administration budget data through visualization software: use of the 'where do my taxes go' tool" the objective of which was to analyze the main technical factors in the implementation of open government strategies (García-García & Alonso-Magdaleno, 2020) whose objective was to analyze the main technical, individual and organizational factors that affect its implementation and use in the communication of complex technical information typical of an open government. The researchers implemented a questionnaire through which important data was obtained from those responsible for the web application "Where my taxes go" in 23 Spanish regional and local governments. Thanks to this, the authors determined that the application does not have a general public in which people spontaneously access this information and that the main public that uses it corresponds to politicians and the media. This represents a real problem and a threat to the effectiveness of governance generated by the administration's lack of clear transparency and accountability strategies and the absence of operating procedures to adapt to the changing budget structure. Similarly, it is important to highlight that the application of open Government can be applied to certain social sectors, as shown in the article entitled "The Open Government partnership as a platform for the advancement of Open Science in Brazil" (Bertin et al., 2019), whose purpose was to relate the participatory construction of a national commitment under the slogan 'Innovation and Open Government in Science,' proposed and committed by Brazil in its 4th National Open Government Action Plan. Managing data from scientific research is an important input in creating strategies associated with the tools used within Open Government. However, Open Science is still unknown to many due to the recentness of its proposal and the existing gap in the research related to it. Therefore, the authors identify a clear need to inform the scientific community about the usefulness of this proposal and the instrumentality of the Open Government Partnership for the construction of a collaborative strategy to support Open Science in Brazil, with the participation of the main actors of the national scientific system. Additionally, within the usefulness described by the authors in the institutionalization of an open government is the fulfillment of principles of transparency in the use of public resources. However, in many cases, these objectives are not fully met due to multiple factors, as shown in the article entitled "Politics, technology and accountability: the facade of transparency of open government data reforms in Paraguay" (García, 2019), whose purpose was to argue how even though governments have adopted the rhetoric of promoting transparency, citizen participation and accountability through technological innovation, in Paraguay's education sector, these reforms were never able to match such rhetoric. This allows considering that the Government did not correctly and transparently record the funds for educational infrastructure in that country.

5. Conclusions

This review article concludes by highlighting the importance of knowing the updated state of the literature published in databases such as Scopus or Wos regarding the study of the relationship between innovation, the use of the Internet and Open Data with the effectiveness of Open Government since through this information it is possible to measure how effective have been the programs and strategies designed to generate the active participation of citizens in the monitoring and control of government affairs in terms of decision-making, distribution of public resources, public investment, among others. From the above, it was possible to highlight that although most Ibero-American governments have implemented programs executed through ICT resources, it has been shown that these are not used at a general level; on the contrary, their use has been limited to sectors such as the media and people active

in politics in order to know the movements in government management. The researchers cited here agree on the need to promote a participatory culture that goes in the same direction proposed by national governments to defend democracy and shield macroeconomic and political systems against acts of corruption such as diversion of public resources, undue contract celebrations, illicit enrichment, bribery, influence peddling, extortion, embezzlement, prevarication, among others, which can be detected as long as the principles of transparency in the management of public resources are complied with. However, among the researchers' findings, it was found that some states have omitted important information within the systems created for this purpose, thus allowing public servants not to have sufficient oversight by individuals. On the other hand, investment in suitable technology for monitoring the public treasury at the local level is of great importance since the governance exercised at the different state levels, namely national, regional, municipal and local Governments, is often characterized by the absence of technological tools that allow society to fulfill these functions. Therefore, this paper concludes by highlighting the importance of disclosing research findings on innovation and the use of technological tools to meet the transparency objectives of an Open Government capable of providing relevant and reliable information on the use of public resources in order to reduce criminal acts against public administration, since from this it is possible to submit these processes to proper feedback and correction in order to design new and better ways to exercise control and oversight in government administration.

References

Acosta, S. I., & Pineda, O. J. (2016). Participación, colaboración, transparencia y datos abiertos. Tras la definición de gobierno abierto. . *euken Bidikay-Revista Latinoamericana de Investigación en Organizaciones, Ambiente y Sociedad, 7(9)*, 209-222.

BERTIN, P. R., Fortaleza, J. M., SILVA, A. C., & Okawachi, M. F. (2019). The Open Government partnership as a platform for the advancement of Open Science in Brazil. *Transinformação, 31.*

Cruz-Rubio, C. N. (2015). ¿ Qué es (y que no es) gobierno abierto? Una discusión conceptual. *EUNOMÍA. Revista en Cultura de la Legalidad*, 37-53.

García, D. R. (2019). Politics, technology, and accountability: The transparency façade of open government data reforms in Paraguay. *JeDEM-eJournal of eDemocracy and Open Government, 11(2)*, 60-93.

García-García, J., & Alonso-Magdaleno, M.-I. (2020). Document details - Communicating public administration budget data through visualization software: Use of the tool 'where do my taxes go'. *Profesional de la Informacion.*

PARKS, W. (1957).). The open government principle: applying the right to know under the Constitution. . *The George Washington Law Review, 6(1),.*

Sandoval-Almazan, R., Valle, G. L., & Millan, V. A. (2021). Barriers for Open Government implementation at municipal level: The case of the State of Mexico. *In DG. O2021: The 22nd Annual International Conference on Digital Government Research*, 113-122.

Buck, J. J. H., Bainbridge, S. J., Burger, E. F., Kraberg, A. C., Casari, M., Casey, K. S., . . . Schewe, I. (2019). Ocean data product integration through innovation-the next level of data interoperability. Frontiers in Marine Science, 6(FEB) doi:10.3389/fmars.2019.00032

Cordeiro, R., Mont'Alvao, C., & Quaresma, M. (2020). Citizen data-driven design for pandemic monitoring. Strategic Design Research Journal, 13(3), 342-354. doi:10.4013/sdrj.2020.133.04

Cornejo-Velazquez, E., Clavel-Maqueda, M., Perez-Lopez-portillo, H., & Lyubimova, E. (2020). Business model of learning platforms in sharing economy. Electronic Journal of e-Learning, 18(1), 102-113. doi:10.34190/EJEL.20.18.1.008

Costa, J., Neves, A. R., & Reis, J. (2021). Two sides of the same coin. university-industry collaboration and open innovation as enhancers of firm performance. Sustainability (Switzerland), 13(7) doi:10.3390/su13073866

Criado, J. I., & Gil-Garcia, J. R. (2019). Creating public value through smart technologies and strategies: From digital services to artificial intelligence and beyond. International Journal of Public Sector Management, 32(5), 438-450. doi:10.1108/IJPSM-07-2019-0178

Criado, J. I., & Guevara-Gómez, A. (2021). Public sector, open innovation, and collaborative governance in lockdown times. A research of spanish cases during the COVID-19 crisis. Transforming Government: People, Process and Policy, 15(4), 612-626. doi:10.1108/TG-08-2020-0242

Cronemberger, F. A., & Gil-Garcia, J. R. (2020). Problem conceptualization as a foundation of data analytics in local governments: Lessons from the city of syracuse, new york. Paper presented at the Proceedings of the Annual Hawaii International Conference on System Sciences, , 2020-January 2052-2062. Retrieved from www.scopus.com

da Rosa, S. S., da Silva, F. C. C., & Pavão, C. M. G. (2021). Open access initiatives in the fight against pandemic. open data and intelectual property in the dissemination of information and knowledge. [Iniciativas de acesso aberto no combate à pandemia. dados abertos e propriedade intelectual na disseminação da informação e conhecimento] Revista Digital De Biblioteconomia e Ciencia Da Informacao, 19 doi:10.20396/rdbci.v19i00.8666880

da Silva, N. F. F., da Silva, N. R., Cassiano, K. K., & Cordeiro, D. F. (2021). Inference of topics with latent dirichlet allocation for open government data. [Inferência de tópicos para identificação de subáreas temáticas de projetos culturais] Perspectivas Em Ciencia Da Informacao, 26(1), 57-79. doi:10.1590/1981-5344/3500

Emaldi, M., Aguilera, U., López-de-Ipiña, D., & Pérez-Velasco, J. (2017). Towards citizen co-created public service apps. Sensors (Switzerland), 17(6) doi:10.3390/s17061265

Fontanela, C., da Silva Albino, J., & Silva Dos Santos, M. I. A. (2020). Open innovation and protection of intellectual property rights in brazilians wind farms. Paper presented at the 26th International Association for Management of Technology Conference, IAMOT 2017, 1766-1780. Retrieved from www.scopus.com

García, D. R. (2019). Politics, technology, and accountability: The transparency façade of open government data reforms in paraguay. EJournal of eDemocracy and Open Government, 11(2), 60-93. doi:10.29379/jedem.v11i2.537

García-García, J., & Alonso-Magdaleno, M. -. (2020). Communicating public administration budget data through visualization software: Use of the tool 'where do my taxes go'. [Comunicación de datos presupuestarios de administraciones públicas mediante visualización: Uso de la aplicación "dónde van mis impuestos"] Profesional De La Informacion, 29(1) doi:10.3145/epi.2020.ene.17

Gascó-Hernández, M., Martin, E. G., Reggi, L., Pyo, S., & Luna-Reyes, L. F. (2018). Promoting the use of open government data: Cases of training and engagement. Government Information Quarterly, 35(2), 233-242. doi:10.1016/j.giq.2018.01.003

Gold, E. R., Ali-Khan, S. E., Allen, L., Ballell, L., Barral-Netto, M., Carr, D., . . . Thelwall, M. (2019). An open toolkit for tracking open science partnership implementation and impact [version 2; peer review: 2 approved]. Gates Open Research, 3 doi:10.12688/gatesopenres.12958.2

Gonzálvez-Gallego, N., & Nieto-Torrejón, L. (2021). Government data openness and coverage. how do they affect trust in european countries? Journal of Data and Information Science, 6(1), 139-153. doi:10.2478/jdis-2021-0010

Hagen, L., Sandoval-Almazan, R., Okhuijsen, S., Cabaco, S., A. Ruvalcaba-Gomez, E., Villodre, J., . . . Valle-Cruz, D. (2021). Open Government and open data in times of COVID-19. Paper presented at the ACM International Conference Proceeding Series, 598-600. doi:10.1145/3463677.3463740 Retrieved from www.scopus.com

Hernáez, A., Rogne, T., Skåra, K. H., Håberg, S. E., Page, C. M., Fraser, A., . . . Magnus, M. C. (2021). Body mass index and subfertility: Multivariable regression and mendelian randomization

analyses in the norwegian mother, father and child cohort study. Human Reproduction, 36(12), 3141-3151. doi:10.1093/humrep/deab224

Jugend, D., Jabbour, C. J. C., Alves Scaliza, J. A., Rocha, R. S., Junior, J. A. G., Latan, H., & Salgado, M. H. (2018). Relationships among open innovation, innovative performance, government support and firm size: Comparing brazilian firms embracing different levels of radicalism in innovation. Technovation, 74-75, 54-65. doi:10.1016/j.technovation.2018.02.004

Klein, H. E., Pufal, N. A., Mattos, G., & Zawislak, P. A. (2020). The nature of entrepreneurial activities in less innovative economies. Paper presented at the 26th International Association for Management of Technology Conference, IAMOT 2017, 1196-1215. Retrieved from www.scopus.com

Lopes, J., Oliveira, M., Silveira, P., Farinha, L., & Oliveira, J. (2021). Business dynamism and innovation capacity, an entrepreneurship worldwide perspective. Journal of Open Innovation: Technology, Market, and Complexity, 7(1) doi:10.3390/JOITMC7010094

Lopes, J. M., Gomes, S., Oliveira, J., & Oliveira, M. (2021). The role of open innovation, and the performance of european union regions. Journal of Open Innovation: Technology, Market, and Complexity, 7(2) doi:10.3390/joitmc7020120

Lopes, N. V. (2017). Smart governance: A key factor for smart cities implementation. Paper presented at the 2017 IEEE International Conference on Smart Grid and Smart Cities, ICSGSC 2017, 277-282. doi:10.1109/ICSGSC.2017.8038591 Retrieved from www.scopus.com

Maestre, G., Astudillo, H., Nieto, W., & Concha, G. (2018). Empirical evidence of colombian national e-government programs' impact on local smart city-adoption. Paper presented at the ACM International Conference Proceeding Series, 517-525. doi:10.1145/3209415.3209439 Retrieved from www.scopus.com

Magalhaes, G., & Roseira, C. (2020). Open government data and the private sector: An empirical view on business models and value creation. Government Information Quarterly, 37(3) doi:10.1016/j.giq.2017.08.004

Mergel, I., Kleibrink, A., & Sörvik, J. (2018). Open data outcomes: U.S. cities between product and process innovation. Government Information Quarterly, 35(4), 622-632. doi:10.1016/j.giq.2018.09.004

Morelli, N., Mulder, I., Concilio, G., Pedersen, J. S., Jaskiewicz, T., de Götzen, A., & Arguillar, M. (2017). Open data as a new commons. empowering citizens to make meaningful use of a new resource doi:10.1007/978-3-319-70284-1_17 Retrieved from www.scopus.com

Musiello-Neto, F., Rua, O. L., Arias-Oliva, M., & Silva, A. F. (2021). Open innovation and competitive advantage on the hospitality sector: The role of organizational strategy. Sustainability (Switzerland), 13(24) doi:10.3390/su132413650

Natário, M. M. S., & Oliveira, P. M. (2018). Portuguese SME innovation sources: Trends of the last decade. Paper presented at the Atas Da Conferencia Da Associacao Portuguesa De Sistemas De Informacao, , 2018-October Retrieved from www.scopus.com

Osorio-Sanabria, M. A., Amaya-Fernández, F., & González-Zabala, M. (2020). Exploring the components of open data ecosystems: A systematic mapping study. Paper presented at the ACM International Conference Proceeding Series, , Part F166737 doi:10.1145/3401895.3401928 Retrieved from www.scopus.com